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ORIGINAL

OPPORTUNITIES TO PROTECT INSTREAM FLOWS IN VERMONT AND PENNSYLVANIA

Fish and Wildlife Service

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PUBLICATIONS IN THE "OPPORTUNITIES" SERIES

Title	Publication number	Status[a]
Instream Flow Strategies for Arizona	FWS/OBS-78/35	Available
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Instream Flow Strategies for Utah	FWS/OBS-78/45	Available
Opportunities to Protect Instream Flows in Alaska	FWS/OBS-82/33	Available
Opportunities to Protect Instream Flows in Nebraska and Kansas	FWS/OBS-83/02	Available
Opportunities to Protect Instream Flows in Minnesota and Iowa	FWS/OBS-83/07	Available
Opportunities to Protect Instream Flows in Georgia	FWS/OBS-83/20	Available
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Opportunities to Protect Instream Flows in Idaho, Oregon, and Washington	Biol. Rep. 85(10)	Available
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[a] Available from the Western Energy and Land Use Team, U.S. Fish and Wildlife Service, 2627 Redwing Road, Fort Collins, CO 80526-2899.

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OPPORTUNITIES TO PROTECT INSTREAM FLOWS IN VERMONT AND PENNSYLVANIA

by

Roger L. Freeman
and
Fredric W. Robinson
Denver University
7039 E. 18th Avenue
Denver, CO 80220

Project Officer

Berton L. Lamb
Cooperative Instream Flow Service Group
Western Energy and Land Use Team
U.S. Fish and Wildlife Service
Drake Creekside Building One
2627 Redwing Road
Fort Collins, CO 80526-2899

Performed for

Western Energy and Land Use Team
Division of Biological Services
Research and Development
Fish and Wildlife Service
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PREFACE

The Western Energy and Land Use Team, Division of Biological Services, U.S. Fish and Wildlife Service, has published a number of similar documents in the past. Information is now available for 29 Western, Midwestern, and Southern States.

In some reports, opportunities in each State are presented in a single document, but in several publications, reports on States from the same geographical region are combined. The combination of State reports presents an opportunity for easy comparison of specific programs. This is particularly useful because of the wide variety of instream flow protection programs or possibilities.

The primary purpose of this series of documents is to point out the opportunities in instream flow management that currently exist under State law, so that planners and managers can anticipate development, plan appropriate programs, and evaluate the costs and benefits of certain courses of action. In addition, the reports are brief histories of the level of success of various State programs. The use of this information can result in a significant cost saving for planners and managers.

In summary, each document has an Introduction which discusses its purpose, uses, and limitations. Each document also has a separate information table that summarizes the contents for each State. It is hoped that the research represented in these reports will provide the kind of overview and preliminary evaluation that will ease the burden of State, local, or Federal planners and managers as they seek to meet their increasingly complex responsibilities.

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INTRODUCTION

"Opportunities to Protect Instream Flows in Vermont and Pennsylvania," provides the reader with a basic survey of State prerogatives and programs that may be used to protect the instream uses of water. Because of the interest and responsibilities of State fish and game agencies and other conservation organizations, most of these opportunities are related to fish and wildlife habitat. However, there are many other instream uses considered, including hydroelectric power production, recreation, navigation, downstream delivery, and waste load assimilation. The purpose of this document is to illustrate methods to protect these instream values within the context of existing rules and regulations.

Even though the authors paid close attention to statutes, this document is not intended as a legal reference. It is designed to be a planning tool to survey current State programs, compare approaches to instream use protection, and index a preliminary evaluation of the costs and benefits of a wide range of programs. Summary tables are provided for each State that serve as an index to available opportunities (Tables 1 and 2). We anticipate that these tables will be the reader's most valuable guide to this report.

In using this report, the reader should be aware of its purpose and limitations. First, only a few of many possible opportunities are described. Initiative, judgment, and creativity should be exercised in dealing with any specific situation. Second, this report should be used only as a starting point. In any situation related to the acquisition of water rights, legal advice should be sought. This report should in no way be construed as a substitute for the opinion of a private attorney, attorney general, or agency counsel. Third, this report is neither a policy nor a decision document; it is simply a collection of opportunities which appear to have utility in a variety of situations.

A purpose of this booklet is to encourage cooperative and innovative thinking by all persons interested in instream flows for fish and wildlife, and watershed management at Federal, State, or local levels of government, as well as private individuals and wildlife organizations. Many talented people want to protect instream flows; their cooperation in a variety of approaches will be necessary to solve the problem.

In order to illustrate this variety of approaches Tables 1 and 2 have been prepared as a special index to this report. These tables describe each opportunity and show the page number within the report on which a particular opportunity is presented. The tables may be the most useful guide to the document because they allow all the opportunities to be quickly surveyed with attention focused only on the items of greatest interest.

No matter whether the report is read straight through or Tables 1 and 2 are used as a guide, the opportunity descriptions themselves offer a means to quickly check the usefulness of a particular approach. Each opportunity section is divided into several parts. First, there is a statement of general description. This is intended to quickly describe the opportunity giving an indication of the formal legal basis for the approach. Second, there is a background discussion. This presentation details and explains the legal or administrative basis for the opportunity. The background section also illuminates any special circumstances that might be encountered. Third, there is an example. Sometimes an opportunity exists but has never been used. When this is the case, no example is given. Usually, however, an example is provided. Finally, there is an evaluation. This evaluation makes clear the costs and difficulties that will be met in implementing a given approach.

Table 1. Opportunities to protect instream flows in Vermont.

Title	General description	Applicable situations
Riparian Rights (see page 11)	Riparian owners can protect beneficial water uses and protect flows.	Riparian uses affected by other uses.
	Riparian land can be purchased or rights condemned to protect flows.	Riparian lands or water rights available.
Groundwater (see page 13)	Conservation and more prudent allocation of groundwater to augment stream flows.	Unregulated, wasteful or excessive groundwater depletion.
Hydropower Licensing (see page 15)	Permits for hydroelectric facilities can be conditioned or denied on the basis of instream flow considerations.	Application made for dam permitor license.
State Pollution Certification (hydropower) (see page 16)	Vermont can deny water pollution certification to hydroelectric facilities or impose conditions based on flow impacts.	Application made to FERC for dam permit.
Comprehensive Planning (hydropower) (see page 18)	Vermont may submit a comprehensive plan for maintaining stream flows to FERC.	Applications or preliminary permits sought or contemplated by hydropower developers.
Nonelectric Dams (see page 19)	Permits for nonelectric dams can be conditioned or denied to protect flows.	Application made for certificate of public good.

Table 1. (Continued)

Title	General description	Applicable situations
Stream Alteration Permits (see page 21)	Permits can be conditioned or denied on the basis of impacts on stream flows.	Application filed for stream flow alteration permit.
Act 250 (see page 22)	Land use permits can be conditioned or denied on the basis of instream flow impacts.	Application filed for an Act 250 permit for a development.
Natural Areas (see page 25)	Designation of State lands as natural areas leads to protection of streams within these tracts.	
Agreements Between Governments and Landowners (see page 26)	Governments may obtain a right in a private owner's property to maintain stream flows.	Landowner who owns riparian rights is willing to exchange, sell, or lease that right.
Fish Obstructions (see page 28)	Any fish obstruction must be authorized by the Vermont Fish and Game Department; this provision can be used to protect stream flows.	Developer or private citizen or group proposed to construct an obstruction.
Protection of Endangered Species (see page 29)	Projects that may jeopardize endangered aquatic species may be denied or conditioned on maintenance of flows.	Project proposed which may impact a listed species.
Water Pollution Control (see page 30)	Water quality permits are contingent on certain instream flows.	Discharger applies for permit to discharge pollution into State waters.

Table 1. (Concluded).

Title	General description	Applicable situations
Natural Resource Districts (see page 33)	Districts have broad powers to implement programs to protect water resources.	An area that experiences stream quality deterioration or flow depletion may form a district to help address these problems.
Conservation Commissions (see page 34)	Municipalities can create commissions to recommend purchases or protection of lands with high instream flow values.	Unprotected streams within commission region are targeted for protection by commission members.
Regional Planning Commissions (see page 35)	Commissions that adopt plans calling for preservation of flows can influence decisions affecting water use.	Commission recognizes need to protect stream flows in certain areas.
Municipal Planning (see page 36)	Municipal plans calling for flow preservation can be adopted by town planning commissions through passage of bylaws.	Municipality identifies stream meriting protection from significant depletion.
Shoreland Regulation (see page 37)	Municipalities can adopt shoreland regulations to indirectly augment stream flows.	Overdevelopment of lakeside property depletes lakes that feed or are fed by adjacent streams.
Public Trust Doctrine (see page 79)	"Boatable" streams in Vermont are subject to State administration for the benefit of the general public.	A public trust stream that requires certain flow rates to support a public use may be protected from depletion.

Table 2. Opportunities to protect instream flows in Pennsylvania.

Title	General description	Applicable situations
Riparian Rights (see page 44)	Riparian owners may protect certain beneficial water uses and protect flows.	Riparian uses affected by other users.
Prescriptive Rights (see page 46)	Holders of prescriptive rights to water may restrain upstream diversions and resist downstream demands to reduce their diversion.	Water in nonnavigable stream used openly and notoriously in manner adverse to other users for 21 years.
Eminent Domain (see page 47)	Municipality can acquire water rights by condemning upstream uses and having that water delivered downstream for their use. 53 Pa. Stat. Ann. § 2905 32 Pa. Stat. Ann. § 631(b).	Upstream user depleting flows required by municipality.
Groundwater (see page 49)	Groundwater withdrawal may eventually deplete instream flows (only the DRBC and SRBC limit groundwater withdrawal in Pennsylvania).	Groundwater withdrawal regulation needs to be provided for by the General Assembly.
Water storage (see page 50)	DER constructs or regulates reservoirs to store water during high flows for release during low flows. 71 Pa. Stat. Ann. § 510-4.	Drought or seasonal low flows inadequate for fish and aquatic life.
Dam Regulation (see page 51)	Instream flows enhanced through regulation of dam operations. 32 Pa. Stat. Ann. § 693.4 71 Pa. Stat. Ann. § 510-8.	Dam or proposed dam depleting downstream flows.

Table 2. (Continued)

Title	General description	Applicable situations
Storm Water Management Act (see page 52)	Proper control of storm water promoted through coordinated watershed management 32 Pa. Stat. Ann. §§ 680.1 *et seq.*	After plan adopted, development within a watershed must be in compliance with the plan.
Soil Conservation (see page 55)	Activities and policies that prevent soil erosion also promote instream flow values. 3 Pa. Stat. Ann. §§ 849 *et seq.*	Soil Conservation Districts develop projects and conduct programs to conserve soil resources.
Land and Water Conservation and Regulation (see page 56)	Instream flows enhanced through land reclamation projects and land acquisitions by DER. 32 Pa. Stat. Ann. §§ 501 *et seq.*	Area in need of reclamation because of coal mining, disaster, or improper use of land.
Covenants Preserving Land Uses (see page 59	Restricting development within watersheds through covenants with landowners. 16 Pa. Stat. Ann. § 11943.	Landowner contemplating development or sale of watershed lands.
Regulation of Thermal-electric Power Plants (see page 60)	Instream flows might be insured through conditioning of highly consumptive uses like thermal-electric power generation. 32 Pa. Stat. Ann. §§ 693.1 *et seq.*	Company or utility proposes to construct power generation facility. Regulation of water withdrawals has not been attempted under this act.
Pennsylvania Scenic Rivers System (see page 62)	Inclusion in scenic river system is considered when decisions are made on granting other regulatory permits 32 Pa. Stat. Ann. §§ 820.21 *et seq.*	Water has wild, scenic, pastoral, or recreational qualities deserving promotion.

Table 2. (Concluded)

Title	General description	Applicable situations
Fisheries Protection and Management (see page 64)	Laws that protect fisheries often also protect instream flows. 30 Pa. Stat. Ann. §§ 2502, 2506 and 3506.	Company or individual is polluting water or affecting flows in manner damaging to fisheries.
Water Quality Regulation (see page 67)	Sufficient quantities of clean and unpolluted waters can be protected by requiring adequate treatment of used water. 35 Pa. Stat. Ann. §§ 691.1 et seq.	Municipality or industry or mining operation has not adequately prepared for treatment.
Water Planning (see page 70)	Plans can stipulate minimum flows and require consideration of instream flow values.	Consideration of water matters on an entire watershed basin reveals problems and solutions not evident if only isolated area considered.
Open Space Lands (see page 71)	Instream flows can be protected through acquisition of lands and the prohibition of development of those lands.	A particular watershed or land area is particularly important for maintaining flows in a stream.
Compacts (see page 73)	River basin compacts provide broad planning and management programs and regulate withdrawals, projects, and flows.	Two or more States share water.
Public Trust Doctrine (see page 79)	Public trust doctrine can protect State natural resources.	Abuse of public lands and waters.

Note: If the actions above involve waters of either the Delaware or Susquehanna Rivers, then the respective compact commissions would also be parties.

OPPORTUNITIES TO PROTECT INSTREAM FLOWS IN VERMONT

by

Roger L. Freeman

INTRODUCTION

The State of Vermont is renowned for its natural beauty, including a wealth of pristine streams and rivers. This natural splendor supports a variety of recreational activities and has attracted numerous visitors to Vermont, resulting in recent intensification of development pressure. Predictably, this population increase and attendant construction boom, in conjunction with renewed interest in hydropower development, has placed a strain on Vermont's surface water and groundwater resources. Although Vermont's water problems do not yet rival those of many western States, there is increasing cause for concern for this vital recreational, environmental, and commercial resource.

This increased interest in water resource protection is reflected in the wide variety of water-oriented bills that have been considered by the Vermont legislature in recent years. One such bill mandated minimum flows on all Vermont rivers; this measure failed and is unlikely to be enacted in the near future. In the 1985 session, another bill was introduced requiring State agency designation of 25 stream sections as "pristine". Such stream segments would be protected from pollutants, dams, and other threats to the recreational or visual value of the stream. Although this particular scheme was not endorsed by the legislature, there seems to be much public support in Vermont for a wild and scenic river protection system.

Fortunately, there are already numerous opportunities in Vermont to protect instream values. This report presents an analysis of these potential strategies within the framework of Vermont's current legal and administrative structure. Utilization of these methods requires an understanding of the authority and jurisdiction of the State governmental agencies that regulate water.

Agency of Environmental Conservation

The Agency of Environmental Conservation (AEC) encompasses many of the major conservation departments of the State. The key water department within the AEC is the Department of Water Resources and Environmental Engineering (WRD), whose powers are set out in Vt. Stat. Ann. Title 10, § 905b. The WRD is the major water policy branch of the AEC, and is active in a variety of water matters, including groundwater regulations. The WRD will play a major role in implementing strategies identified in this study. Other branches of the AEC that deal with water matters include the Department of Fish and Wildlife, whose water-related functions include the issuance of permits for obstructions of fish passages (Vt. Stat. Ann. Title 10, § 4607). AEC's Department of Forests, Parks and Recreation is responsible for the wise stewardship of forest resources and parks and can designate State lands as "natural areas." Such areas are subject to department regulations designed to preserve the natural condition of the land, including the maintenance of instream flows. The State Natural Resources Conservation Council is also within the AEC; the council oversees and coordinates the activities of the natural resource conservation districts, which focus on water quality issues at the local level (see Vt. Stat. Ann. Title 10, §§ 701-740).

Water Resources Board

Several other Vermont agencies that administer water matters receive administrative support from the AEC, but are otherwise autonomous. The most important of these is the Water Resources Board (WRB), which develops rules for establishing water quality standards and pollution charges, and regulates the surface use of public waters. The WRB also hears appeals from various WRD decisions and cooperates with neighboring jurisdictions on matters involving interstate streams. Although some of the board's authority was transferred to the WRD by the Vermont legislature in 1981, the board continues to play an important role in water matters.

Environmental Board

Another influential State agency is the Environmental Board, the appellate body that reviews applications for permits under Act 250 (Vt. Stat. Ann. Title 10, §§ 6001-6092). This important law (explained in detail below) mandates that any construction project or development that exceeds a certain size must receive State approval prior to the commencement of construction. The review process focuses on minimizing the environmental impact of developments and provides an important mechanism for mitigating the detrimental effects of projects on instream flows.

Public Service Board

The Vermont Public Service Board (PSB) has jurisdiction over the licensing of projects that relate to the generation of electric energy for public use. However, this authority has been virtually nullified by court rulings, which hold that the U.S. Federal Energy Regulatory Commission (FERC) has exclusive jurisdiction in this area (see below section on hydropower development).

Local Agencies

On a local level, Vermont has created numerous regional planning commissions to facilitate the prudent development of specific regions. Landowners may form natural resource conservation districts to address problems of water quality, soil erosion and other environmental issues. Municipalities are also intimately involved in the land use planning process, which has recently begun to place more emphasis on the need to plan developments with an eye toward conserving water resources.

RIPARIAN RIGHTS

Opportunity

Under the common law doctrine of riparian rights, a landowner is entitled to the reasonable use of waters of a stream that border his land, and may prevent others from depriving him of that right. Any government, business, or private individual holding such a right can preserve instream flows by demanding that enough water be delivered downstream to support the landowner's use. Additional rights can be obtained by those seeking to protect instream flows through purchase or condemnation of riparian property.

Background

Vermont, like most eastern States, subscribes to the riparian doctrine of water law. Under the modern riparian doctrine, every owner of land bordering a stream or lake has the right to have that body of water stand or flow along his land, subject only to the right of other riparians to make reasonable use of the water. This last provision is the main tenet of the "reasonable use" theory of riparian law, which was adopted in Vermont in Lawrie v. Sillsby [82 Vt. 505, 74 Atl. 94 (1909)]. The earlier "natural flow" theory, which holds that every riparian owner is entitled to the natural flow of the stream regardless of circumstances, cannot resolve conflicting claims to a stream and leads to inequitable and sometimes absurd results. Even those States that ostensibly follow the "natural flow" rule have recognized that reasonable interferences with such flow must be legally protected (see for example, Ga. Code § 105-1407).

Vermont courts, like those of most other riparian States, have given an absolute preference to domestic uses (which include washing, drinking, and watering livestock) regardless of the effect on the stream [Barre Water Co. v. Carnes 65 Vt. 626 (1893)]. Apart from domestic uses, disputes between riparians are resolved by considering the reasonableness of each conflicting use. Underlying this basic determination is the basic rule that riparian owners have correlative rights, so that one riparian owner's use cannot deprive another of a coequal right to enjoy the water.

How do Vermont courts determine what is a reasonable use? Courts are more likely to deem a use "reasonable" if water is applied to riparian rather than nonriparian land. In Vermont, however, the fact that water is being applied to nonriparian land is only one criterion in determining whether a use is reasonable [see Lawrie v. Sillsby, 74 Atl. at 96]. The size and character of the stream, the quantity of water appropriated, and all the circumstances surrounding the stream and the proposed use are also weighed by the courts. The issue of reasonableness is one for the trier-of-fact[1] to decide, and oftentimes the equities[2] supporting each claim ultimately determine the outcome of the lawsuit.

Since all landowners whose property abuts a stream have a riparian water right, acquisition of riparian lands by individuals or government agencies is a potential method for protecting stream flows. Such lands can be purchased outright by State or local agencies. Alternatively, specific water rights can be condemned by municipalities or water districts formed by two or more towns.

Example

The leading American case involving application of the riparian doctrine to a minimum flow dispute originated in Arkansas. No such example was found in Vermont; thus the Arkansas example will be discussed here. In Harris v. Brooks [225 Ark. 436, 283 S.W.2d 129 (1955)], owners of a recreation camp sought to enjoin an irrigator from lowering the level of a lake to such an extent that fishing and boating opportunities were impaired. The court first determined that both recreation and irrigation are lawful uses and should be accorded equal weight. The court then weighed a multitude of factors and decided that the irrigators could not reduce the lake level below a certain point without unreasonably interfering with the plaintiff's rights. An injunction was issued prohibiting the irrigators from depleting the lake below that point. Harris is the leading example of the successful assertion of a riparian right to maintain a certain minimum water level and the verification of such a use by the courts.

Evaluation

Using the riparian doctrine to preserve stream flows need not involve a resort to litigation. Far more disputes are settled by negotiation between riparians than by the courts. A riparian owner, armed with the knowledge that his reasonable requirement for a certain flow is legally protected, can often formulate an agreement with an upstream diverter which provides for instream flow preservation.

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[1] The term "trier-of-fact" is used throughout to refer to one who, in a formal setting, is or acts like a jury.

[2] The term equity is a formal reference to the idea of "fairness".

Should such an accord be unattainable, a riparian owner faces a substantial burden in proving a factual case to the court. A litigant must often hire experts to testify about such matters as the amount of water used, the reasonableness of such a use, and the unreasonableness or excessiveness of the defendant's use. Plaintiffs may also need to overcome the reluctance of some judges to enjoin upstream uses that provide economic benefits to a community. Although cases such as Harris [and more recently Nilsson v. Latimer 664 S.W.2d (Ark. 1984)] recognize the coequality of nondomestic uses, some courts may take a different view[3]. Since the determination of reasonableness involves the exercise of much judicial discretion, court actions are risky and may be more useful as a bargaining tool for downstream riparians.

Purchases of riparian lands by governmental units to protect instream values is an expensive proposition and does not often occur in Vermont. More often, water rights are condemned by local governments to preserve water supplies. Downstream delivery of water to a town can result in preservation of instream flows within that stretch of the stream. In this case, instream flow preservation is an indirect benefit of a program whose main purpose is to provide water to town residents.

GROUNDWATER

Opportunity

Modern developments in the field of hydrology have clearly demonstrated the interrelationship between groundwater supplies and surface water flows. Conservation and prudent allocation of groundwater supplies are important long-term methods of preserving and augmenting instream flows.

Background

Vermont courts subscribe to an extreme version of the absolute ownership rule for groundwater, which was reaffirmed by the Vermont Supreme Court in Drinkwine v. State [131 Vt. 127, 300 A.2d 616 (1973)]. The doctrine holds that a landowner has an absolute right to use all groundwater that percolates through his property, regardless of whether that use is wasteful or designed to maliciously deprive a neighbor of water. It is ironic that Vermont, with its reputation for environmental awareness, is the only jurisdiction that still adheres to this older, rigid version of the ownership rule.

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[3] See dissent in Sandborn v. People's Ice Co. [82 Minn. 43, 84 N.W. 641 (1900)], which argues that people's livelihoods should be preferred over recreational values.

Several years after the Drinkwine decision, the Vermont legislature indicated that it disapproved of the court's rigid approach to groundwater allocation. The legislature enacted Vt. Stat. Ann. Title 10, § 1278, which provides that:

> It is the policy of the state that groundwater resources shall be protected, regulated and, where necessary, controlled in order to protect and promote the general welfare of the public.

Title 10, section 1279 effectuates this policy by mandating that the AEC formulate a plan to protect groundwater and control the pollution of underground supplies. The WRD has developed this groundwater protection strategy and has identified and mapped Aquifer Protection Areas (APA's) for over 200 municipal groundwater systems. Information from APA's and nonmunicipal groundwater systems will be used to further the protection effort.

In addition to sections 1278 and 1279, Title 10, section 905b(13) requires the WRD to undertake a continuing study of groundwater and to collect data pertaining to the quantity and quality of the underground supply. The WRD is now requiring all well drillers to obtain a license and submit information on completed wells[4]. It is not feasible, however, for the WRD to enforce such a requirement by prohibiting the drilling of all wells without prior State approval.

Evaluation

Opportunities to protect instream flows through stricter regulation of groundwater are abundant in Vermont. In theory, sections 1278 and 1279, as well as recently enacted sections 1390-99, provide the statutory authority to require well drillers to demonstrate a reasonable use for underground water prior to drilling a well. Such a requirement, however, would directly conflict with the judicially prescribed "absolute ownership" rule. The time may be ripe for the Vermont Supreme Court to reconsider this rule in light of the legislative policies evinced in the Vermont statutes.

Although Vermont has recently passed a more specific, comprehensive allocation and conservation scheme it does not appear to override the common law rule as applied to private landowners. Additional legislation should provide for a permitting process for all groundwater users and require an applicant to make a prima facie showing of the reasonableness of his proposed use. Such a scheme faces similar enforcement problems as the current system, since Vermont is still a very rural State and landowners can place their wells in remote spots to avoid detection. However, the long-term benefits of such a plan would include the preservation of instream surface flows.

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[4] These requirements were expanded by a Vermont groundwater protection bill passed just prior to publication of this report (Title 10, § 1390-1399). The bill focuses mainly on maintaining water quality, although well drilling licenses are also specifically required by the act.

HYDROPOWER DEVELOPMENT

Small-scale hydropower development has undergone a resurgence in Vermont and other areas since the energy crunch of the 1970s. Retrofitting and redevelopment of existing dams account for much of the new hydropower activity. A number of permitting and review processes must be completed prior to construction of a hydroelectric facility. These programs present opportunities for citizens and State agencies to advocate the preservation of minimum flows on impeded streams and rivers and to seek a more comprehensive approach to hydropower licensing.

Licensing

Opportunity. Citizens, State agencies, or businesses can seek to preserve minimum flows by lobbying the Vermont Public Service Board (PSB) to deny a permit to or impose conditions on facilities that will unduly impair water purity and supply (Vt. Stat. Ann. Title 30, § 248a).

Background. The Vermont Public Service Board administers a State permitting program for all electrical generation facilities within the State [Vt. Stat. Ann. Title 30, § 248a]. The PSB must issue a "certificate of public good" for all such projects. Among the criteria that must be satisfied by an applicant is the requirement that construction "will not have an undue adverse effect on esthetics, historic sites, air and water purity, the natural environment, and the public health and safety."

Under section 248, a public hearing must be held whenever a company petitions for a certificate. Several of the departments within the AEC, as well as affected municipalities and regional areas, often participate in this hearing process. The hearing must be advertised in the newspaper to promote maximum public input.

Evaluation. The effectiveness and scope of the section 248 process has been greatly restricted by Citizens Utilities Co. v. Prouty [122 Vt. 443, 176 A.2d 751 (1961)] and Board of Electric Light Commissioners v. McCarren [563 F.Supp. 374 (D. Vt. 1982), aff'd 725 F.2d 176 (2d Cir. 1983)]. In the Prouty case, it was held that a project upon a navigable stream, which had not yet been licensed by the Federal Energy Regulatory Commission (FERC), could not be authorized by the PSB. The recent Federal case extended Prouty by holding that the PSB has absolutely no jurisdiction over any project that requires a Federal license. Thus the Federal court in McCarren enjoined the PSB from asserting jurisdiction over a facility on the Winooski River in Vermont.

These cases have had a predictable effect on the PSB public good certificate process. Why should a utility submit to the PSB review process when courts consistently hold that FERC has exclusive jurisdiction over any dams proposed on a navigable stream? In short, the section 248 process is now only applicable to projects that are exempted from licensing procedures by FERC. These exempted projects are generally small, and those who wish to protect instream values in the face of a major dam project must look to FERC to preserve these interests.

Although FERC very rarely turns down a project because of adverse environmental impacts, the agency does condition many licenses on the maintenance of instream flow values. Yet many States still feel effectively shut out from the hydropower licensing process. Emerging strategies for increasing State input into the FERC licensing process include State certification under Section 401 of the Federal Water Pollution Control Act (33 U.S.C. 1431), and the comprehensive planning requirement of Section 10a of the Federa Power Act [16 U.S.C.§ 803(a)].

State Pollution Certification

Opportunity. All applicants for hydroelectric licenses (as well as Corps of Engineer projects) resulting in "discharges" must obtain certification from the State that such discharge will comply with applicable provisions of the Federal Water Pollution Control Act. Since hydropower facilities often affect the regularity and magnitude of downstream flows, the water quality of a dammed waterway may well be impaired by a new facility. Vermont, as well as other States, can use the certification process to insure that adequate stream flows are maintained on rivers that are to be used for hydroelectric generation (33 U.S.C. § 1341).

Background. Section 401(a)(1) of the Federal Water Pollution Control Act (33 U.S.C. § 1341(a)(1) provides that:

> Any applicant for a Federal license or permit to conduct any activity including, but not limited to, the construction or operation of facilities, which may result in any discharge into the navigable waters, shall provide the licensing or permitting agency a certification from the State in which the discharge originates or will originate, or, if appropriate, from the interstate water pollution control agency having jurisdiction over the navigable waters at the point where the discharge originates or will originate, that any such discharge will comply with the applicable provisions of [the effluent limitation requirements of the Act] ...No license or permit shall be granted if certification has been denied by the State...

The final sentence of section 401(a)(1), in conjunction with the legislative history of the section suggesting that Congress intended that all dams be certified, compels FERC to obtain state certification before issuing a license. This provides an important mechanism for State input, since the States retain the right to set more stringent discharge requirements than those provided in the Federal act, and to force licensees to demonstrate compliance with these standards under section 401 [see Power Authority of the State of New York v. Dept of Environmental Conservation 379 F.Supp. 248, 249 (N.D.N.Y. 1974)].

The WRD of Vermont has taken an active role in ensuring that hydroelectric projects do not unduly impair instream flows. Vermont will typically condition certification on the maintenance of a specified minimum flow. The method uitlized to determine the particular required flow depends on a variety of circumstances, though generally one of three methods is applied: (1) The seven-day average flow which has a 10% chance of occurring in any given year (known as the 7Q10 flow); (2) The Aquatic Base Flow as defined by the U.S. Fish and Wildlife Service; or (3) The Fisheries Flow Needs Assessment, a method developed by Vermont officials. This latter method involves an evaluation of the available fish habitat associated with particular streamflows; the minimum required flow is then determined by considering the extent of fish habitat reduction that can be tolerated by that particular stream. Since the 7Q10 method does not account for the maintenance of fish habitat, Vermont emphasizes the latter two methods in the certification process and has allowed applicants to select from these two flow rates.

If the State does certify a particular project, Section 401(a) provides enforcement mechanisms ensuring that the certification conditions are met. If Vermont determines that a facility is not complying with water quality standards due to changes in construction design, effluent standards, or the characteristics of the water, FERC may be required to either revoke or suspend the project's license until such time as compliance is reestablished. For example, conditions relating to water quality standards for State fisheries may be violated for a number of reasons; the State retains the power under section 401(a) to see that such a situation is rectified. This enforcement power may well turn out to be more pivotal than the authority granted to the States to deny certification at the outset.

Example. Although Vermont has had extensive experience with the certification process, a recent licensing episode in Maine provides the best demonstration of the potential utility of the State certification process for preserving instream flows. The East Machias Project, involving the redevelopment of an existing dam, was planned on one of Maine's Atlantic salmon rivers. Although the project did not involve an actual impoundment of water, Maine officials determined that the project would cause great harm to salmon populations and would impair other recreational values. After carefully scrutinizing the applicable U.S. Environmental Protection Agency regulations and statutes pertaining to the certification process, Maine Department of Conservation officials concluded that section 401 was designed to protect more than the actual physical and chemical quality of a stream. The State found that designated uses of a waterway (e.g., salmon propagation) must also be considered under the section 401 process, and after determining that the East Machias Project would have an unreasonable impact on designated stream uses, Maine denied a section 401 permit to the project.

In the absence of State certification, FERC was faced with a dilemma -- either defer to the State and deny the permit, or accept the application and risk litigation, which could result in judicial expansion of State power in this area. FERC managed to sidestep the crucial issue of the scope of section 401 by ruling that under that provision, no license can be issued without State certification. FERC dismissed the application without prejudice, allowing the Maine applicants to reapply should the State be persuaded to certify the project.

Thus, FERC implicitly accepted the State position, but managed to prevent the case from establishing a legal precedent for expanding the scope of section 401. Nevertheless, other States such as Oregon, have followed Maine's lead and have considered the potential impact of a hydroelectric project on instream uses before certifying the project. Although the Maine government was more concerned about effects on salmon migration than preserving instream uses, Maine's approach is applicable to instream flow considerations.

Evaluation. The section 401 permitting process provides a number of mechanisms for States to preserve instream flows. The WRD of Vermont could adopt the approach of Maine and Oregon and take an expansive look at the impacts of a project before issuing a State certificate. Alternatively, the WRD may withhold certification until conditions are imposed on the licensee to provide for sufficient downstream flow to adequately assimilate existing pollution discharges. Regardless of the method of implementation, the section 401 strategy is vital in that it provides the opportunity for Vermont to reassert some of the control over dam licensing that has been divested from the State by the courts.

Comprehensive Planning

Opportunity. A State may submit a comprehensive plan to FERC for improving and developing its rivers and streams. This plan may provide for maintenance of instream flows on many waterways. FERC may adopt all or part of such a plan in determining what conditions to place on a license (16 U.S.C. 803).

Background. Section 10(a) of the Federal Power Act [16 U.S.C. 803(a)] provides that all licenses shall be issued on the condition that:

> the project adopted, including the maps, plans, and specifications, shall be such as in the judgment of the Commission will be best adapted to a comprehensive plan for improving or developing a waterway or waterways for the use or benefit of interstate or foreign commerce, for the improvement and utilization of water-power development, and for other beneficial public uses, including recreational purposes; and if necessary in order to secure such plan the Commission shall have authority to require the modification of any project and of the plans and specifications of the project works before approval.

The key phrase in this provision is "comprehensive plan." The statute provides that FERC's "best judgment" determines whether the project's maps and specifications are properly adapted to the comprehensive plan, but does not specify how the plan itself is to be formulated. Cases decided under this provision describe the criteria to be weighed under such a plan, but no case considers the extent to which States can formulate and submit a comprehensive plan, or whether a State plan could be binding on FERC.

Example. The State of Maine has been at the forefront of the effort to use section 10(a) as a means of injecting State input into the Federal licensing system. Maine has submitted a comprehensive plan to FERC, titled and structured to conform to the statute. The plan provides an assessment of hydropower potential in Maine and specifies which rivers and watersheds should be developed and which should be preserved.

The Maine approach has recently been tested by the Vermont AEC with an eye towards taking a similar look at Vermont rivers. A river resource inventory has been conducted by the AEC and the National Park Service to gather resource data on Vermont rivers. These data may ultimately be used to formulate a comprehensive development plan similar to the Maine report.

The States hope to bind FERC to these plans under the theory that FERC's failure to formulate its own plan allows State and local entities to fill the void. Thus far, however, FERC denies that it is bound by Maine's plan, asserting that the "comprehensive plan" consists of whatever the agency in its sole discretion deems prudent (on a case-by-case basis). The issue has not yet been resolved; Maine is organizing a lobbying effort to amend the Federal Power Act to provide for a structured system of State input. Such a bill has been introduced by Senator Mitchell of Maine in both the 1984 and 1985 sessions. Although the Federal Power Act has not often been amended, many States are concerned about their lack of input into FERC licensing decisions, and the time may be ripe to address this troublesome issue.

Evaluation. Like the strategy discussed above regarding State pollution certification, this approach offers a vital opportunity for Vermont to force Federal licensing actions to conform to the policies and statutes of the State. In particular, the comprehensive planning approach would allow broad State input into decisions regarding the imposition of instream flow maintenance conditions on hydroelectric licensees. Although it seems improbable that Vermont could eventually dictate to FERC which streams could be used for power generation, comprehensive planning could allow States to place more stringent flow rate conditions on hydroelectric facilities.

DAMS DESIGNED FOR PURPOSES OTHER THAN HYDROPOWER

Opportunity

Nonhydroelectric dams that are or will be capable of impounding more than 500,000 cubic feet of water must be approved by the WRD (Vt. Stat. Ann. Title 10, Chapter 43, §§ 1080-1105). The criteria to be considered by the WRD in determining whether the project serves the "public good" include a number of instream flow-related guidelines. The review process can potentially be utilized to either block a particularly destructive project or mitigate the dam's effects on instream flow values.

Background

Vermont employs a separate review process for hydroelectric dams and dams designed for other purposes. As discussed above, the courts have held that the State hydropower permitting scheme is preempted by the Federal Energy Regulatory Commission (FERC); however, these rulings do not apply to nonelectric facilities, since FERC's jurisdiction only encompasses electrical generating units. Thus, the dam review process under Chapter 43 remains a viable means of protecting instream flows.

Under Chapter 43, the WRD may only approve an application if the project is deemed to serve the "public good." Among the considerations to be weighed in making this determination are scenic and recreational values, effects on fish and wildlife, the need for a minimum water discharge flow rate schedule to protect water quantity and quality, and the existing recreational uses of the affected waterway (Title 10, § 1086). Obviously, these criteria can be used to directly support an argument for disapproval of an ill-advised dam on the basis of impairment of instream flow. Since section 1086(b) specified that the WRD may attach conditions to a project "to protect any element of the public good listed above," an opponent to a project can also seek mitigative restrictions on dam operations.

Example

In Application of Hemco, Inc. [129 Vt. 534 (1971)], the Water Resources Board (which previously handled section 1086 application) rejected a dam application, finding that the benefits of preserving sports fishing, the stream bed, and white water canoeing outweighed the primarily economic benefits to be provided by the facility. The Vermont Supreme Court upheld the board's decision, ruling that it was not unreasonable for the board to place these recreational and instream flow considerations above other benefits. The Hemco case clearly illustrates that the section 1086 process can be used not only to condition a project on instream flow preservation but to actually block dam construction.

A more recent section 1086 proceeding should provide an indication of the inclinations of the current permitting authority, the WRD. A developer applied for WRD approval of an impoundment project designed to create a snowmaking pond at Madden Brook, an addition to the Killington ski resort. Among a variety of objections to the project voiced at the "public good" hearing was the claim that the impoundment would unduly impair instream flow values. The Fish and Wildlife Department of the AEC has refused to endorse the project without mitigation procedures for fisheries impacts. It appears that under Hemco and the section 1086 criteria, the WRD could legally deny the permit altogether. In any event, conditions will almost certainly be imposed on the project to provide for maintenance of instream flows.

Evaluation

The primary disadvantage of the "public good" process is that it applies only to fairly large impoundment projects. (Dams impounding less than 500,000 cubic feet of water need only obtain a stream alteration permit--see next section). Also, the criteria for determining the public good are so broad that the WRD is accorded a good deal of discretion in determining the advisability of the project. Nevertheless, the statutory criteria incorporate a number of aspects of insteam flow preservation, and thus provide a solid foundation for imposing instream flow maintenance conditions on prospective developers.

STREAM ALTERATION PERMITS

Opportunity

Major alterations of the course or current of a watercourse must be approved by the WRD. The factors to be weighed by the WRD in considering an application for stream alteration provide ample opportunity for imposing conditions designed to preserve instream flows (Vt. Stat. Ann. Title 10).

Background

Vt. Stat. Ann. Title 10, § 1021, states that:

> A person shall not change, alter or modify the course, current or cross-section of any watercourse with a drainage area greater than ten square miles at the location of the proposed change, alteration or modification within or along the boundaries of this state either by movement, fill, or by excavation of ten cubic yards or more, unless authorized by the [WRD].

A permit must be granted, subject to appropriate conditions, if it appears that the alteration will not increase flood hazards, significantly damage fish life or wildlife, or impair riparian rights (Title 10, § 1023).

Projects that commonly fall under this statute include gravel removal operations, channelization projects, and construction of bridges. Private dam projects that impound less than 500,000 cubic feet of water also must obtain alteration permits. Those who fail to obtain permits are subject to enforcement actions for penalties by the State, but this is a rare occurrence. Since permits are usually granted, there is little incentive for construction managers to attempt to sidestep the permitting process.

Violations of permit conditions are often minor and rarely cause disputes between the State and the permittee. The statute does provide for appeals from the WRD to the WRB should "any person" be aggrieved by a decision; this allows third parties to obtain review if they are disenchanted by a WRD determination. Any party to a WRB proceeding may seek judicial review.

Evaluation

The stream alteration permitting process seems to engender much less controversy than Act 250 and hydropower licensing proceedings (see chapters on Statewide Land Use Laws and Hydropower Development). Although the statutory scheme focuses on fairly large projects, activities requiring permits generally have less impact on instream flows than developments and hydropower facilities. As a result, instream flow disputes rarely arise during stream alteration permitting proceedings.

Nevertheless, applicants under this statutory scheme must persuade State officials and interested parties that their project will not significantly impair fisheries, wildlife, or riparian rights. A project that is not tailored to meet these criteria may well face opposition from either the State or private parties. Thus, the statute probably serves as a deterrent to those who would otherwise "cut corners" on instream flow protections.

STATEWIDE LAND USE LAWS

Act 250

Opportunity. This act requires all "developments" and "subdivisions" (defined in the statute) to be permitted by a State review panel prior to commencement of construction. Before granting a permit, the State body must find that the project satisfies 10 specific statutory criteria. Several of these standards involve water supply and quality; the act thus provides a mechanism for tempering or prohibiting development which will impair instream flow values (Vt. Stat. Ann. Title 10, §§ 6001-6092; known as "Act 250").

Background. Act 250 was enacted in 1970 in response to concerns that Vermont's development boom would eventually overrun the State's natural resources. The act requires a wide variety of developments to be permitted by the State, including:

1. Commercial or industrial improvements involving more than 10 acres of land within a 5-mile radius of concentration;

2. An industrial or commercial improvement on more than one acre of land within a municipality that has not adopted subdivision bylaws;

3. Housing projects with 10 or more units within a 5-mile radius or concentration;

4. An improvement on more than 10 acres, which is to be used for municipal or State purposes;

5. Improvements for commercial, industrial, or residential use above the elevation of 2500 feet;

6. Exploration for, or extraction or processing of, fissionable source material;

7. Drilling of an oil and gas well; and

8. A subdivision of land partitioned for the purpose of resale into 10 or more lots within a 5-mile radius of concentration. (Title 10, § 6001(3), (19)).

Any builder or developer whose project falls under one of these categories must obtain a permit from a three-member district environmental commission. Vermont is divided into 9 districts, each composed of an area encompassing 20 to 40 municipalities. Appeals can be taken to the Environmental Board by most parties to the commission proceedings; parties often include the applicant, the State, towns, regional planning commissions, and adjoining property owners. Local governments and individuals often take the most aggressive stance on an application. Since proceedings on appeal to the Environmental Board involve a de novo review of all disputed findings, opponents to a project are given ample opportunity to voice their objections.

The applicant must satisfy an array of environmental criteria in order to quality for a permit. Those standards that directly invoke instream flow considerations are:

1. Section 6086(a)(1). The project must not result in undue water pollution, and must maintain the natural condition of the stream.

2. Section 6086(a)(2). There must be sufficient water available for the needs of the project.

3. Section 6086(a)(3). The project must not cause an unreasonable burden on an existing water supply.

4. Section 6086(a)(8). The project must not have an unduly adverse effect on the scenic or natural beauty of the area or rare and irreplaceable natural areas, including necessary wildlife habitat and endangered species.

Instream flow considerations are also implicated by section 6086(a)(10) of the act, requiring compliance with local and regional plans (see section on local and regional planning).

Section 6086(c) authorizes the ultimate issuer of a permit (either the commission or board) to include conditions in the permit pertaining to either the 10 criteria or various other statutory requirements. It is this provision that is most often invoked by the permitting body to mitigate environmental impacts. For example, the Vermont Agency of Environmental Conservation usually seeks to impose a condition in the permit specifying a minimum streamflow of 0.5 cubic feet per second per square mile of drainage area on all affected streams. This standard, recommended by the U.S. Fish and Wildlife Service, provides a measure of instream flow protection, assuming that the permittee complies with the conditions. However, since the State lacks the funds to properly enforce Act 250 permit conditions (there are only two Act 250 inspectors Statewide), these minimum flow standards are not always met.

Example. One of the most controversial issues involving the diversion of water from a stream concerns snowmaking facilities. Vermont is reknowned for its thriving skiing industry, which depends on extensive artificial snowmaking due to the irregularity of the annual snowfall. Vermont has not enacted legislation regulating snowmaking, leaving these projects to be controlled by local zoning laws and Act 250. Although conditions imposed on ski developers under Act 250 have mitigated the impacts on stream flows, concerns about extensive snowmaking facilities continue to be voiced by citizens and State and local governments.

One such facility, located at the Killington Ski Resort near Sherburne, Vermont, received an Act 250 permit that specifically provided for maintenance of instream flows. The permit approved the creation of a snowmaking pond for the facility, which was to be formed primarily from the waters of Falls Brook. The District Environmental Commission determined that such a pond would satisfy criterion (1), provided that a flow of 1.5 cfs/square mile of drainage area was maintained in Falls Brook. This flow rate is three times the standard rate sought by the Agency of Environmental Conservation in most proceedings, and it may well be a misprint in the permit. In any event, Act 250 has proven to be a fairly effective means of mitigating the impacts of snowmaking on stream quality and quantity.

The utility of the act in mitigating environmental impacts of the ski industry will likely be put to a tougher test in the near future. A proposed facility at Madden Brook, requiring the impoundment of a brook to create a snowmaking pond, has faced severe opposition since its inception. The impoundment project is of such magnitude as to require a certificate of public good under Vt. Stat. Ann. Title 10, Chap. 43 (see above action on nonelectric dams). The recent hearings under this statute were replete with references to the minimum stream flow problem; if the certificate is ultimately issued, subsequent Act 250 proceedings will certainly focus on appropriate conditions to protect instream flows. This highly contested Act 250 case may provide a better indication of the willingness of the environmental commissions (and possibly the Environmental Board and Vermont Supreme Court) to impose strict conditions to preserve instream uses.

Evaluation. Despite charges of unconstitutionality, Act 250 has endured to become a pervasive and effective means of tailoring development to fit environmental conditions and values. Although about 97% of the applications for development permits are eventually granted, the process almost always results in modification or conditioning of a construction plan. Given the technical nature of many of the disputes, it is predictable that compromise usually prevails over complete denial or acceptance of a project. Yet such a compromise can sometimes lead to the abortion of a project that in the absence of Act 250 would have had severe impacts on water quality and quantity. Permit hearings provided under the act present a valuable forum for resolving conflicts regarding the environmental impacts of a project.

The act also focuses on protecting a wide variety of natural resources, not just water, and is also aimed at improving land-use planning. Thus the act is not primarily used as a mechanism to preserve instream flow in a particular waterway. Issues have been raised in periods of low flow as to whether or not a project will comply with the water quantity provisions of the act. Thus, instream flow problems, though not often the major point of contention in Act 250 proceedings, are certainly addressed by the act's environmental criteria.

Water quality issues have often arisen in connection with a proposed project. The conflict usually involves the method and extent of waste treatment, rather than the potential for water quality deterioration due to depletion of supply. Developers tend to accept water quality conditions imposed by the commission or board, rather than relocate their project. Also, section 6086(a)(1), pertaining to water pollution, includes a subcriterion that the project should "maintain the natural condition of the stream"; this provision is often incorporated in the permit as a condition.

There is no doubt that the act has great potential utility for embracing instream flow issues. As discussed above, the act has already been used to mitigate the impacts of controversial ski projects. As water availability decreases with greater demand, other projects that involve consumptive uses will receive more scrutiny as to their compliance with criteria (1), (2), and (3). Also, water quality problems that interrelate with flow rates will likely proliferate as the supply dwindles and development proceeds. Instream flow rates have already merited consideration under criterion (8), especially under the subcriterion prohibiting a project from imperiling "necessary wildlife habitat or any endangered species." It is inevitable that instream flow questions will also be raised in connection with "necessary" wetland habitat or protected species. Thus, Act 250 is sure to play a pivotal role in the future in efforts to maintain instream flows.

Natural Areas

Opportunity. Lands within State forests and parks can be set aside by the Commissioner of Forests, Parks, and Recreation (with the governor's approval) as "natural areas." These areas are subject to specific regulations designed to preserve the wilderness character of the lands. Streams and rivers within a natural area are protected from impairment of water quality or quantity (Vt. Stat. Ann. Title 10, § 2607).

Background. Title 10, section 2607 authorizes the commissioner to set aside natural areas--"limited areas of lands which have retained their wilderness character, although not necessarily natural and undisturbed, or have rare or vanishing species of plant or animal life or similar features of interest which are worthy of preservation..." (Title 10, § 2607(b)). Departmental regulation of land uses and practices must be designed to manage or maintain the areas in their natural condition.

Vermont currently has designated 23 tracts as natural areas, covering 13,729 acres of land. A number of other sites are now being considered for inclusion in the natural area system. The Department of Forests, Parks and Recreation is currently formulating management plans for each individual natural area. Although the degree of protection afforded each site varies according to circumstances (controlled logging is allowed in some areas), neither discharges into streams nor impoundments or diversions thereof are permitted in any natural area. Thus, the many streams that flow through such natural areas are afforded a great deal of protection along that particular stream segment. Preservation of instream flows within the natural area may also have ramifications for upstream or downstream users.

Example. One of the largest and most visited natural areas in Vermont is Camel's Hump. One of the attractions of the site is a beautiful waterfall, which had been subject to impoundments before the tract was acquired by the State and designated a natural area. Another recently purchased natural area is located at Mount Mansfield. This site covers 3,850 acres and features a number of pristine, free-flowing streams. Both these tracts are now strictly regulated to preserve and protect the natural features of the area, not the least of which are instream flow values.

Evaluation. The primary drawback to this mechanism for protecting stream flows is that only State park and forest land can be designated as a natural area. Moreover, the nomination of lands is discretionary with the commissioner, which hinders efforts by private citizens to force inclusion of specific tracts. Approval by the governor also presents a potential political roadblock to designation of an area that may be valuable for commercial exploitation.

On the other hand, once an area is designated, streams within that tract are given a great deal of protection. If a particular stream merits such full protection, conservationists may seek to use this provision to protect a stretch of the waterway. Although the State is not authorized to use its condemnation powers to obtain natural areas, worthy tracts can be acquired through purchase, gift, or land exchange. Conservation groups can therefore work to facilitate the acquisition of natural areas through these well-established channels.

Agreements Between Governments and Landowners

Opportunity. Both State and town governments may obtain a right in a landowner's property to maintain stream flows therein. This can be accomplished through a variety of agreements, including scenic easements, leases, land exchanges, and intergovernmental pacts (Vt. Stat. Ann. Title 10, Chap. 155 § 6301-6309).

Background. State agencies and municipalities may contract with riparian owners to preserve the flow of a stream and may acquire a permanent interest in a waterway under Vt. Stat. Ann. Title 10, Chap. 155, §§ 6301-6309. (Section 6301 specifically states that one purpose of the statute is to "preserve and enhance Vermont's scenic natural resources.") Although no statutory authority is actually required to authorize governmental acquisition of conservation easements, the act provides impetus for conservation groups and State agencies to push for utilization of State funds for this purpose.

State and local governments may also enter into a variety of other agreements, such as options to purchase, rights of first refusal, lease and term agreements, and land trades. All of these approaches are commonly utilized by private citizens; government adoption of these methods differs only in the purpose behind acquiring the legal right. State and local governments could acquire these land interests with an eye towards protecting free-flowing streams that otherwise would be within an area of rapid development.

Example. The Vermont Fish and Game Department entered into a land exchange with a property owner that benefitted both parties. The department exchanged a parcel on the edge of one of its properties for an inholding within the department tract. The inholding had no access and was of little immediate use to the landowner. The exchange served to consolidate the department's property and prevented future conflicts regarding the development of the private tract. Streams within the department's land are no longer faced with that threat and can be used solely to sustain fish and wildlife populations.

Evaluation. Purchases of interests along or in a stream provide complete protection for instream flow values along that segment. Upstream and downstream users, however, are still free to impound water on that stream within the confines of the riparian law doctrine and applicable statutes. Acquisition of a scenic easement without a complete evaluation of the protection value of that right may turn out to be an imprudent use of State funds.

Scenic easements and other approaches are most useful when an extended stretch of a river can be shielded from depletion. Yet the costs of obtaining such an extensive interest are often beyond Vermont's means. The key consideration surrounding the acquisition of such an easement, then, is whether the amount that must be expended could be better used to support a more widespread program for stream protection. Although such budgetary tradeoffs are inherent in every governmental decision, they are particularly applicable to the question of the advisability of purchasing an easement along a stream.

Methods of obtaining funds for the programs described here are specifically discussed in a handbook entitled "Funding Sources and Alternative Strategies for Meeting Recreation Needs," available from the Vermont Agency of Environmental Conservation.

FISHERIES AND WILDLIFE MANAGEMENT LAWS

Fish Obstructions

Opportunity. The Commissioner of the Fish and Game Department must authorize any obstruction to fish passage in a stream or lake inlet or outlet (Vt. Stat. Ann. Title 10, § 4607). The interrelationship between fish movement and stream flow suggests that this provision could be used to mitigate the detrimental impacts of a project on instream flow rates.

Background. A permit is required by all persons who impede fish passage by means of a "rack, screen, weir, or other obstruction." Neither the statute nor any judicial decision elaborates on the meaning of an "obstruction." While it is clear that a physical, tangible obstacle to fish passage (e.g., a dam) is covered by the statute, the status of other less tangible potential impediments is undetermined. For instance, does thermal pollution, which can greatly restrict fish movement, qualify as an obstruction? The Fish and Game Department apparently thinks not, defining "obstruction" as a permanent barrier that will regulate the flow of water for a continuous period.

The statute does not spell out the criteria to be weighed by the department in deciding whether a permit should be issued. In practice, the department simply refuses to permit fish obstructions, and works with the WRD to ensure that such violations are brought to the attention of department officials. Therefore, the statute serves as a deterrent to those who would otherwise build small dams or other obstructions for such purposes as creating a swimming hole.

Example. In about 1982, several nonresidents of Vermont purchased property on Stony Brook near Stockbridge, Vermont. Without consulting any authorities, the owners installed cement footings in the brook to create a dam for a swimming hole. A State warden noticed the dam and brought it to the attention of law enforcement agents within the Fish and Game Department. The department, relying on section 4607, ordered the dam to be torn down. After a good deal of discussion between the landowners' attorney and the department, the property owners agreed to destroy the impediment, thereby preventing any alteration of stream flow conditions.

A similar incident occurred in the mid-1970's on the much larger White River, where the Lion's Club of Vermont proposed to create an impoundment to provide swimming facilities during a year of particularly low flow. After determining that such a facility would create an obstruction to fish passage, the department ordered the removal of the dam. Needless to say, such a position was not altogether popular, but since the legal authority for the department's order was indisputable, the Lion's Club reluctantly complied. Again, instream values were maintained through implementation of section 4607.

Evaluation. Passage of this provision long predated concerns over instream flows, and the act is used mainly as a tool to preserve fish passage. Yet utilization of this provision to prevent a particular obstruction would likely indirectly enhance instream flows on that stretch of the river. For instance, the Fish and Game Department may order a dam to be torn down on the basis of its detrimental impact on fish mobility. Such an action would obviously serve the dual purpose of providing a measure of protection to the stream itself.

The utility of this section for protecting stream flows depends in part on how broadly the term "obstruction" is defined. Although the State recognizes that both large and small projects fall under section 4607, their definition of an "obstruction" excludes such things as thermal discharges. Thus, the act cannot presently be used to mitigate the direct impacts of pollutants on fish mobility or the indirect effects on instream flows. The statute does serve, however, as an important protective device covering small, localized obstructions that otherwise might go unregulated.

Hydroelectric facilities that are regulated by the Federal government are not subject to section 4607 (see section on hydropower development). The "public good" review process for nonelectric dams must, however, include input from the department of the project's effects on fish and wildlife. Those seeking to block such a project may utilize section 4607 as additional legal authority for denial of a "public good" certificate on the basis of detrimental fish and wildlife impacts.

Protection of Endangered Species

Opportunity. A proposed project that may jeopardize the continued existence of an endangered or threatened species or necessary habitat may be conditioned on the installation or implementation of protective measures. Protection of instream flows may be one of the conditions deemed necessary to protect a jeopardized species (Vt. Stat. Ann. Title 10, § 5401-5409).

Background. In 1981, Vermont adopted a Protection of Endangered Species law (Vt. Stat. Ann. Title 10, §§ 5401-5409), which provides a measure of protection for vanishing species. The act requires the Secretary of the Agency of Environmental Conservation to adopt State endangered and threatened species lists. No person shall take such a plant or animal "knowing that it is a member of an endangered or threatened species" (Title 10, § 5403(a)). The secretary may adopt rules for the protection of these species and may establish conservation programs, such as land purchase initiatives or contracts for wildlife management or refuge areas. Other State agencies must govern only in a manner which does not jeopardize these conservation programs.

The statute provides a number of exceptions and limitations to the protective provisions. Most notably, section 5408(a)(2) allows the secretary to control endangered wildlife "when a season is declared in the Vermont fish and game regulations and where the secretary determines that a reduction in population will reduce economic losses of State citizens caused by the predation of that species." Section 5409 provides for the issuance of variances under specific circumstances.

These limitations, in conjunction with the weak protective measures mandated by the act, render the Vermont law a very watered-down version of the Federal act. Moreover, the AEC has adopted an endangered species list containing only seven species (see AEC Regulations, § 13.79.1), most of which are protected under Federal law (a more extensive list is presently under consideration). The lake sturgeon is the only fish or aquatic species on the list. A threatened species list has also been proposed, but has not yet been adopted by the AEC.

The Vermont statute has had a real effect only in the area of Act 250 permits. Criterion (8)(A) of Act 250 (Vt. Stat. Ann. Title 10, § 6086(8)(A)) prohibits the granting of a permit "if it is demonstrated...that a development or subdivision will destroy or significantly imperil necessary wildlife habitat or any endangered species," [emphasis added] and (1) the benefits to the public will not outweigh the loss caused by the imperilment of the species; (2) the impacts of the project on the species have not been completely mitigated; or (3) there is an alternative site for the project. The burden of proof is on one who opposes the project to demonstrate both imperilment of a species and one of these three conditions.

Also, if a local or regional plan provides protective measures for an endangered species, Act 250's criterion (10) requires a proposed project to instigate these measures. This allows localities to have direct input into the degree of protection afforded endangered species and the extent to which profitable ventures can avoid compliance with these proscriptions.

Evaluation. Apart from Act 250 considerations, the Vermont Protection of Endangered Species law currently provides no additional safeguards beyond those already accorded by the Federal act. Nevertheless, the Vermont statute does provide authorization for State officials to apply funds to refuge areas and conservation programs designed to prevent further liquidation of species. Thus, the extent to which the act will eventually result in the protection of instream flow depends on budgetary and political considerations as well as the number of wetland and aquatic species included in the lists. The act certainly affords the potential for a variety of habitat protection schemes that include stream flow standards.

Criterion (8) of Act 250 has already been used to place conditions on or deny a project. Criterion (10) has similar potential, with the added advantage of allowing localities to have input into the protection process. When a State list is adopted which really supplements the Federal list, instream flow protection conditions to protect plants and wildlife will become increasingly common in Act 250 permits.

WATER POLLUTION CONTROL

Opportunity

Any person who intends to discharge waste into waters of the State must obtain a permit from the Water Quality Division of the WRD. Such a permit will be issued, subject to terms and conditions, if the proposed discharge will not reduce the quality of the receiving waters below a certain level dictated by the stream classification. Since water quality is in part a product of the amount of water in a stream, issuance of water quality permits is often contingent upon the maintenance of stream flow (Vt. Stat. Ann. Title 10, Chapter 47, Section 1251-1283).

Background

Vermont has implemented the Federal Water Pollution Control Act by establishing a Statewide permitting system for those who discharge pollutants into State waters (Vt. Stat. Ann. Title 10, Chapter 47, §§ 1251-1283). Pursuant to Water Quality Standards promulgated by the WRB, and Title 10, § 1252, State waters are divided into three classifications: Class A (suitable for public water supply - excellent quality); Class B (suitable for swimming, recreation, and irrigation -- high quality fish habitat and good aesthetic value -- acceptable for public water supply with filtration and disinfection); and Class C (suitable for boating, noncontact recreation, and irrigation of crops not used for consumption without cooking -- habitat for wildlife, aquatic biota, and fishes -- suitable for compatible industrial uses). Domestic waste discharge is allowed only into Class C waters.

Most Vermont streams were originally designated Class B waters, and many have remained in that category. The Water Quality Standards in many cases, however, establish a higher level of protection than that necessary to protect the uses associated with each class of water. For example, although Class B waters are generally described as being suitable for swimming, the standards frequently require a degree of protection beyond that which would be necessary to ensure swimmable waters (see Water Quality Standards, §§ 3-03, effective January 7, 1985).

Reclassification proceedings are the responsibility of the WRB. Since most streams are now classified as Class B, most reclassification petitions are attempts to change a stream from Class B to Class C, in order to enable municipalities or industry to discharge domestic waste into that stream. These attempts at reclassification occur infrequently, however, and some requests have been denied or reworked due to strident opposition to reclassification.

The WRB has recently created a new classification of waters called "Outstanding Resource Waters." These waters are "those Class A or B waters which constitute an exceptional state or national resource or which have exceptional recreational or ecological significance" (Vermont Water Quality Standards, §1-03.C). Once a watercourse is so designated by the board, its existing high quality must be protected and maintained.

The WRB has also established a minimum stream flow rate upon which the issuance of all sanitary effluent discharge permits is based. That flow is the "7Q10"[5] rate--the lowest mean discharge for seven consecutive days, which has a 10% chance of occurring in any given year (see Water Quality Standards, § 2-02). This minimum flow rate is estimated at each discharge point and serves as the foundation for estimates of the amount of treated waste that can be assimilated by each waterway. The board estimates that actual stream flows exceed the 7Q10 rate approximately 98% of the time. A discharger is not responsible, however, for exceedance of a pollution limit instream that results from diminution of stream flow below the 7Q10 standard.

Evaluation

The key to relating waste assimilation to instream flow rates lies in the estimation of drought flow conditions in a stream. A stream with a low estimated flow rate has a correspondingly low assimilative capacity, thereby reducing the number of dischargers that can utilize that waterway. Conversely, if the State agencies overestimate the 7Q10 base flow, an artificially high amount of waste discharge will be authorized by the government, resulting in overutilization of the stream and possible water quality standard violations. Since dischargers cannot be held responsible if the projected flow rate of a stream exceeds the actual rate, it is the sole responsibility of the State to accurately assess stream flows prior to permitting and to continue to adjust that estimate. In the context of preserving instream values, overestimated stream flow projections lead to excess use of the stream and encourage overdevelopment along the riverbanks.

There is significant disagreement among specialists over whether or not the 7Q10 rate normally is adequate for an aquatic and recreational base flow. At any rate, the WRB recently revised State regulations to allow the WRD to substitute absolute low flows for 7Q10 rates. These absolute low flows must be less than the actual flow at all times. Implementation of this standard on streams where 7Q10 estimates prove inadequate is an emerging strategy for protecting instream values. The importance of this strategy is underscored by the fact that downstream dischargers are affected by the estimated minimum flow rate applied upstream. Thus, an entire waterway may be overutilized and overpolluted if base flow estimates are not accurate.

Vermont's newly promulgated regulation concerning Outstanding Resource Waters provides an additional mechanism for protecting instream flows in the more pristine streams. Although designation of such streams is discretionary with the board, once a stream is accorded this status it is given almost complete protection from degradation. Since these waters must possess exceptional resource value or recreational or ecological significance, the provision seems tailor-made to protecting instream flows in pristine streams. The Outstanding Resource Waters rule was just promulgated in January 1985, however, and it remains to be seen whether this stream classification will be extensively applied.

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[5] This statistic is the lowest flow occurring seven consecutive days once in 10 years. In this report use is consistent with practice in the State under examination. Therefore, for Vermont it is "7Q10" and for Pennsylvania it is "Q7-10."

LOCAL AND REGIONAL PLANNING

Natural Resource Conservation Districts

Opportunity. Landowners may petition the Natural Resources Conservation Council to form a natural resource conservation district within a certain territory. Such a district has a variety of broad powers aimed at protecting water resource values, particularly water quality. Improving water quality can lead to better fish habitat and a greater public water supply, thus lessening demands on stream flows in pristine rivers (Vt. Stat. Ann. Title 10, Chapter 31, Section 701-740).

Background. Formation of natural resource districts is authorized under the Vermont Soil Conservation Act (Vt. Stat. Ann. Title 10, Chapter 31, §§ 701-740). Any group of 25 landowners may petition the council to organize a natural resources district to function in the territory described in the petition. If the council determines after a public hearing that it is "in the interest of the public health, safety, and welfare" to approve the formation of a district, a referendum is held in that territory on the question of whether or not such a district should be created. A simple majority is sufficient to authorize establishment of the district. Responsibility for State oversight and regulation of these districts is vested in the Natural Resources Conservation Council. In addition, activities of the districts are coordinated by the nonprofit Association of Conservation Districts.

The governing body of a district consists of five supervisors; their powers are set forth in Title 10, § 723. Although this authority has historically been directed towards prevention of soil erosion, several districts have recently initiated water quality monitoring programs within their regions. These programs are coordinated by the Association of Conservation Districts and involve cooperation between high school laboratories, teachers, and students. Stream samples are taken by participants and tested for compliance with various water quality standards. These data are used to identify point sources of pollution and to spur increased protection of deteriorating rivers.

Example. The Ottauquechee Natural Resource Conservation District initiated the pilot program of water quality monitoring. This effort has involved input from Woodstock High School and has resulted in heightened awareness of water quality problems in the area and the identification of point source problems. Further information on the water quality monitoring programs can be obtained from Director of the Vermont Association of Conservation Districts, P.O. Drawer B, Montpelier, VT 05602.

Evaluation. The utility of this strategy lies less in the protection of a specific stream than in preservation of the overall stock of freeflowing streams. Areas of excessive soil erosion or deteriorating water quality can be organized into districts, which then can gradually implement methods to identify water quality problem sources. This general strategy can lead to an increase in the overall supply of high-quality streams and thereby reduce depletion pressure on pristine water courses.

Conservation Commissions

Opportunity. Municipalities may create conservation commissions to serve as advisory boards on natural resources issues and to inventory and recommend the purchase of lands with significant environmental value. (Vt. Stat. Ann. Title 24, Chapter 118, §§ 4501-4506). A segment of stream within a municipality may be protected through the combined efforts of a conservation commission and the town's legislative body.

Background. Conservation commissions are simply arms of a municipal legislature, specifically organized to address environmental concerns. Members of a commission are uncompensated town residents appointed by the municipal legislature (Title 24, § 4502). The commission is empowered to conduct studies of all the natural resources of the municipality, recommend the purchase of or receive gifts of unique lands, and assist other State and local agencies in environmental evaluations (Title 24, § 4505). Perhaps the most important role of the commission is to assist zoning and Act 250 boards in making environmental assessments of proposed developments. A commission may also provide environmental education through a variety of communication channels.

Evaluation. Inherent in a commission's powers is the ability to evaluate land-use practices that affect instream flows. Thus, a commission that desires to protect a stream can pursue a variety of methods to accomplish that goal. Pressure can be put on the town governing body to either purchase riparian lands or provide special zoning protections for streambed areas. If the development is subject to Act 250 requirements, the commission can firmly recommend that instream flow maintenance conditions be included in the permit. The commission can also utilize its public information capabilities to educate residents on the need to preserve a particular stream or watershed and thereby increase political pressure to accomplish that goal.

Although budgetary constraints enter into all governmental decisions, funding limitations are often of even greater importance at the local level. The ability of the commission to effect a particular land purchase or wage an information campaign will largely be determined by the town's resources. Municipalities should consult the handbook "Funding Sources and Alternative Strategies for Meeting Recreation Needs" (available through the AEC) to become acquainted with the variety of means of obtaining funds in Vermont.

A commission is solely an advisory body with no independent regulatory power. Nevertheless, Vermont places great emphasis on local and regional input into its decisional framework--the hub of environmental activity often occurs at a local level. Commissions can thus work within their statutory authority to catalyze efforts to maintain stream flows within a particular area.

Regional Planning Commissions

Opportunity. Regional planning commissions, formed by a group of contiguous municipalities, have much input into land-use planning decisions in that region. Regional plans that recognize the need for preservation of instream flows can influence local and Statewide decisions affecting water use (Vt. Stat. Ann. Title 24, Section 4341).

Background. Regional planning commissions can be created by regional voters or by the legislative body of each of a group of adjacent townships (Vt. Stat. Ann. Title 24, § 4341). Each municipality must appoint at least one representative to serve on the commission (Title 24, § 4343).

A commission's broad powers include the coordination of programs, studies, and recommendations designed to improve planning of land use and urban development. Guidance for implementing this cooperative effort is provided by the regional plan, which among its aims should tend to promote the reasonable use of water resources (Title 24, § 4347(5)). Regional plans are adopted by approval of no less than a majority of the commissioners (Title 24, § 4348(f)).

The regional plan may include a variety of statements and programs, including "a statement of policies on the preservation of rare and irreplaceable natural areas, scenic and historic features and resources" (Title 24, § 4348a(6)). Thus, it is clear that water resource issues can and should be addressed in the plan. Unfortunately, very few commission plans have directly addressed water resource issues (see example below for an exception).

Section 438(h) provides that in all regulatory proceedings (including Act 250 proceedings and impoundment hearings) "in which the provisions of a plan are relevant to the determination of any issue in these proceedings:"

> (1) the provisions of the regional plan shall be given effect to the extent that they are not in conflict with the provisions of a duly adopted municipal plan applicable to the area in question; and (2) to the extent that such a conflict exists, the regional plan may be given effect if it is demonstrated that the project under consideration in the proceedings would have a substantial regional impact.

Criterion (10) of Act 250 (Vt. Stat. Ann. Title 10, § 6086(10)) specifically mandates that developments must conform with duly adopted regional plans. These provisions make the regional plan a potentially vital tool in mitigating impacts of development on instream flows.

Example. One plan that does discuss a broad array of water resource problems is the Two Rivers-Ottauquechee Regional Plan. The plan describes a number of general and specific recommendations and policies aimed at preserving stream flows in the area. For example, the plan (p. 11) asserts that "pristine waters should be protected from development, water withdrawal and other activities which diminish their purity or natural flow or condition." An Act 250 development along a pristine stream in that region may be strictly conditioned on preservation of instream flows pursuant to Title 4, § 4348(1) and criterion (10) of Act 250.

Evaluation. This strategy provides a promising method of providing regional input into water allocation decisions. To be most effective, instream flow preservation sections must be inserted in a number of regional plans across the State. The AEC should work with the regional commissions toward inclusion of flow preservation sections in all regional plans. Moreover, provisions in regional plans must be stated in more absolute terms in order to mandate the inclusion of specific protective actions in Act 250 (and other) permits under Section 4348(h).

Municipal Planning

Opportunity. Municipal plans, like regional plans, can indirectly or directly require the preservation of instream flows and thus structure the course of subsequent development of riparian lands in the city. Municipal plans can be implemented through the passage of bylaws (Vt. Stat. Ann. Title 24, Chapter 117).

Background. Under Vt. Stat. Ann. Title 24, Chap. 117, Subchapter 5, §§ 4382-4387, municipal planning commissions can adopt a plan for development with the approval of the town legislative body. Like regional plans, town plans may include, among other things, land-use planning provisions and a statement of policies on the preservation of natural features (Title 24, § 4382, § 4383(c)).

Once a plan is adopted, it can be implemented by the municipality through the passage of bylaws that "shall have the purpose of implementing the plan, and shall be in accord with the policies set forth therein" (Title 24, Chap. 117, Subchapter 6, § 4401(a)). Among the bylaws provided by this section are zoning regulations that prescribe "specific uses of land, water courses and other bodies of water" (Title 24, § 4401 (b)(1)(a)). Regulations restricting shoreland development and providing for flood hazard areas are also authorized by this section (Title 24, § 4401 (b)(4) and (b)(5)).

Example. Many towns in Vermont have adopted municipal plans and implemented them through a variety of types of zoning bylaws. The Town of Shelburne contains an area that is zoned as a flood hazard district; all flood plain activities, except agricultural and recreational uses, must meet strict floodproofing requirements (see Title 24, § 4412). As a result, this area has seen little development, and the streams therein may be shielded from depletion. Although adoption of flood plain bylaws is primarily prompted by National flood insurance requirements, and not by a desire to provide recreation and farming, the end result includes the preservation of water resource values.

Evaluation. Vermont places great emphasis on local and regional stewardship of resources, and the town planning process provides a vital mechanism for local input into water resource allocation decisions. Moreover, since all town zoning laws must be in accord with a duly adopted municipal plan, these plans can be even more useful tools for regulating instream flow depletion than regional plans. A municipal plan that specifically mandates the protection of a stretch of stream within the town limits can provide a legal framework for the passage of zoning laws prohibiting uses that will significantly deplete the flow of that stream. Also, developments requiring State approval under Act 250 must comply with these local plans under criterion 10 (Title 10, § 6086 (10)). Although municipal plans necessarily govern only limited areas, they can be very effective catalysts in prompting laws and permit conditions designed to maintain stream flows.

Shoreland Regulation

Opportunity. Municipalities may adopt shoreland regulations to achieve a number of objectives that implicate instream flow preservation. A particular watercourse or lake can be protected by a municipality through the adoption of bylaws under this section. Private citizens can lobby their local government to pass shoreland regulations for this purpose (Vt. Stat. Ann. Title 10, Section 1422).

Background. Shorelands are defined as "the lands being between the normal mean water mark of a lake, pond or impoundment exceeding twenty acres and a line not less than five hundred feet nor more than one thousand feet from such mean water mark" (Vt. Stat. Ann. Title 10, § 1422(8)). A municipality may adopt shoreland regulations to:

(1) prevent and control water pollution;

(2) preserve and protect wetlands and other terrestrial and aquatic wildlife habitat;

(3) conserve the scenic beauty of shorelands;

(4) minimize shoreline erosion;

(5) reserve public access to public waters; and

(6) achieve other municipal, regional or State shoreland conservation and development objectives (Title 24, § 441(a)).

Under Title 10, § 1425(b), the State Agency of Environmental Conservation, municipalities, and all State agencies must coordinate attempts to establish shoreland bylaws. The AEC has submitted a complete report to the general assembly on the status of shoreland zoning in Vermont.

Evaluation. The shoreland zoning provisions are primarily designed to temper the effects of rampant lakeside development on water quality and quantity. Thus, the zoning bylaws that are passed under these provisions usually are aimed at protecting a particular lake or pond and the surrounding areas. The hydrological interrelationship between adjacent watercourses dictates, however, that a zoning bylaw mandating a minimum lake level or preservation of surrounding wetlands will indirectly protect those streams that feed or are fed by the lake.

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OPPORTUNITIES TO PROTECT INSTREAM FLOWS IN PENNSYLVANIA

by

Fredric W. Robinson

INTRODUCTION

Pennsylvania is one of the wettest States in the Nation and possesses abundant water resources. In fact, flooding, rather than water shortage, has been Pennsylvania's most serious water problem. Pennsylvania is also one of our more industrial and populated States. Industrial as well as domestic, municipal, agricultural, energy, and recreational demands on Pennsylvania's water supply are great and increasing. The intensive and variable use of Pennsylvania's water will challenge the ability of resource agencies to maintain instream flows sufficient to support quality aquatic and fisheries resources. This report presents an analysis of various opportunities for protecting instream flows within Pennsylvania's legal and administrative structure.

In recognition of the intense and growing demand on its resources, Pennsylvania adopted an "environmental rights" amendment in 1971 which states:

> The people have a right to clean air, pure water, and to the preservation of the natural, scenic, historic and esthetic values of the environment. Pennsylvania's public natural resources are the common property of all the people, including generations yet to come. As trustee of these resources, the Commonwealth shall conserve and maintain them for the benefit of all people (Art 1, § 27 Pennsylvania Constitution).

This constitutional mandate could prove important in future attempts to preserve instream flows. In addition, Pennsylvania has established a permit system to control water use by water supply agencies and power generation facilities, and has several statutory procedures designed to protect the navigability of waterways, to protect and improve water quality, to control floods, and to conserve and use water in accordance with balanced water planning. These permit and statutory systems can, under the proper circumstances, be used to preserve instream flows in Pennsylvania.

Despite this introductory emphasis on statutes and administrative control, Pennsylvania has very little State administrative control over individual water rights. Water use disputes are resolved in the courts. Most cases involve disputes between individuals over the right to use water. Relief awarded by the court has been by way of injunction to prevent diversions of water that interfere with a riparian owner's use of that water, and money damages to compensate for unlawful impairment of water use. This court-determined law will be discussed more fully below in the section on water rights.

Government Agencies

For effective protection of instream flows, it is essential to understand the authority and functions of Pennsylvania agencies and interstate commissions that administer water use and planning. This section provides a brief overview of Pennsylvania's administrative framework as it applies to protecting instream flows.

Department of Environmental Resources. The Department of Environmental Resources (DER) was created in 1971. It was given responsibilities relating to water, which previously had been exercised by several State agencies (71 Pa. Stat. Ann. § 510-1). The DER now administers most of the important State programs relating to water. Specifically, the DER took over the responsibilities of the Department of Forests and Waters, the Water and Power Resources Board, the Flood Control Commission, the Water Supply Commission, the Pennsylvania State Park and Harbor Commission of Erie, the State Forest Commission, the Land Reclamation Board, the Land Restoration Board, and the Sanitary Water Board (71 Pa. Stat. Ann. § 510-1). Furthermore, the DER took over those powers and duties of the Department of Health and the Secretary of Health that pertain to sanitary affairs, the issuance of waterworks permits, the control of water pollution, solid wastes, sewage and sewage facilities, and water conservation (71 Pa. Stat. Ann. § 510-1). A complete list of those departments, boards, and commissions that were abolished and functions transferred to DER appears in 71 Pa. Stat. Ann. § 510-103. Reading the statutes can be confusing and misleading if this transfer and reorganization of powers is not recognized, because most of the relevant acts were passed prior to the creation of the DER and continue to refer to the old agency alignment. Individual programs are specifically set forth in later sections of this report.

The reorganization created several subagencies to perform various functions within DER including: the Environmental Quality Board (EQB) (71 Pa. Stat. Ann. § 510-20), the Environmental Hearing Board (EHB), (71 Pa. Stat. Ann. § 510-21), and the Citizens Advisory Council (71 Pa. Stat. Ann. § 510-22).

The EQB consists of: the Secretaries of the Departments of Environmental Resources (Chairman), Health, Commerce, Transportation, Agriculture, Labor and Industry, and Community Affairs; the Executive Directors of the Pennsylvania Fish Commission, Game Commission, Planning Board, and Historical and Museum Commission; five members of the Citizens Advisory Council to the DER; and four members of the General Assembly. The EQB prepares Pennsylvania's Environmental Master Plan, establishes standards and regulations, and reviews DER activities.

The EHB consists of three persons who are learned in the law. They are appointed by the governor and one is designated as Chairman. The Secretary of Environmental Resources appoints a secretary to the EHB. In addition, the EHB employs hearing examiners. The EHB is the adjudicating body within DER that holds hearings and issues rulings on DER actions and orders. EHB may rule on the constitutionality of DER regulations [St. Joe Mineral Corp. v. Goddard, 14 Pa. Commonwealth Ct. 624, 324 A.2d 800 (1974)], but may not rule on the constitutionality of statutes [Philadelphia Life Ins. Co. v. Commonwealth, 410 PA. 571, 190 A.2d 111 (1963)].

The Citizens Advisory Council is composed of the Secretary of Environmental Resources and 18 other members appointed by the governor, the President Pro Tempore of the Senate, and the Speaker of the House of Representatives. The Citizens Advisory Council is the liaison between DER and the legislature and public. Its function is to review environmental laws and report to the executive and legislative branches, suggesting new laws or necessary modifications of existing ones.

DER issues a broad-based variety of regulations and standards related to water resources as discussed in later sections. It can enforce standards and statutes for which it is responsible by means of administrative orders, licensing and permit procedures, and by various "actions in equity". Actions in equity involve questions of "fairness and justice," which a court or quasi-judicial body may answer by any of several orders. These include mandamus, injunction, and contempt-of-court. A typical sequence is that DER will determine that a party is violating a statute, regulation, standard, or condition on a license, then issue an order demanding compliance within a specified period of time. The party may appeal this order to EHB and, pending the outcome of that appeal, to the Commonwealth Court. If the DER order is affirmed and the alleged violator fails to comply within the specified period, DER will normally seek an injunction or other ruling commanding compliance when the statute under which DER is acting so provides. A good example of such a statute that provides for injunctive relief is the Clean Streams Law (35 Pa. Stat. Ann. § 691.601). Finally, when an injunction has been issued, DER will seek a contempt citation if the offending party violates the injunction.[6] (In some situations, State statutes provide a contempt sanction for violation of administrative orders, by passing the need to obtain a court injunction (Weston 1985)). The steps taken by DER in this respect depend on the remedies provided by the statute under which DER is acting.

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[6] The Commonwealth Court has exclusive and original jurisdiction in cases brought against the Commonwealth and exclusive appellate jurisdiction in appeals from administrative decisions. However, the court's original jurisdiction is not exclusive as to cases brought by the Commonwealth. Most environmental enforcement actions may be brought by the Department in Commonwealth Court or in the Court of Common Pleas for the county where the violation occurs (Weston 1985).

Apart from Commonwealth Court's exclusive and original jurisdiction in the above described situation, numerous statutes declare violation of their provisions to constitute nuisance and confer jurisdiction upon various common pleas courts for abatement actions [see Commonwealth v. Glen Alden Corp., 481 Pa. 57, 210 A.2d 256 (1965)]. In such cases, private individuals, instead of DER, can become the principal enforcers of environmental laws.

Actions of the DER are appealable to the EHB. No action of the DER adversely affecting any person is final as to that person until that person has had the opportunity to appeal the action before the Environmental Hearing Board (71 Pa. Stat. Ann. § 510-521). Final decisions of the EHB are appealable to the Commonwealth Court, (42 Pa. Stat. Ann. § 763), but the scope of review is limited to whether constitutional rights were violated, error of law was committed, or necessary finding of fact was not supported by substantial evidence [Der v. Leon E. Kocher Coal Co., 305 A.2d 784, 9 Pa. Cmwlth. 110 (1973)].

The Pennsylvania Fish Commission

The Pennsylvania Fish Commission (PFC) is an independent administrative organization consisting of nine citizens appointed by the governor (30 Pa. Stat. Ann. Ann. § 301). The PFC and its staff were established for purposes of the encouragement, promotion, and development of fisheries interests, and the protection and distribution of fish (30 Pa. Stat. Ann. § 321). The agency is funded primarily through license fees and fines that it collects and is therefore relatively free of legislative control [30 Pa. Stat. Ann. § 521].

As a result of the intimate dependence of fish on water, the PFC's regulatory authority often complements or exceeds the DER's in water matters. For example, the PFC utilizes its statutory authority to penalize parties that cause stream and watershed disturbances and water pollution that are deleterious to aquatic life [30 Pa. Stat. Ann. § 2502, 2504, and 2506]. Moreover, because of its more singular goal of enhancing fisheries, the PFC's regulatory authority over the erection and operation of dams (Pa. Stat. Ann. 3501-3509) is often more beneficial to instream flow values than DER's.

The PFC conducts or controls many of the studies that establish the need for and benefit of the various programs of all agencies that may protect insteam flows. The PFC cooperates closely with the DER and river compact commission in all matters affecting instream flows. The PFC is generally regarded as the environmental conscience of Pennsylvania.

River Compact Commissions

Pennsylvania has entered into a number of interstate compacts that are involved with strategies to protect instream flows. Several of the compact commissions are only advisory in nature, but two, the Delaware River Basin Commission (DRBC) and the Susquehanna River Basin Commission (SRBC), have considerable powers and responsibilities over a large portion of the waters of the State (32 Pa. Stat. Ann. §§ 815.101 et seq., and 820.1 et seq). To accommodate both State and Federal interests, the Federal government and each signatory State have a voting member on the respective commissions.

The functions and duties of the DRBC and the SRBC often overlap with the DER. The commissions therefore "advise, consult, contract, financially assist, or otherwise cooperate" with the DER and other State agencies where practicable (DRBC Company § 3.9, SRBC compact § 3.7). The commissions confer with DER and other Pennsylvania agencies when formulating plans affecting Pennsylvania streams. The planning of all projects by a Pennsylvania or local agency that might affect the waters of the two basins must be undertaken in consultation with the respective commission (DRBC Compact § 11.2, SRBC Compact § 12.2).

The compacts confer three powers on the commissions in regulating water diversions and uses: to review and approve projects that have a substantial effect on basin water resources (DRBC Compact § 3.8, SRBC Compact § 3.10); to regulate diversions within designated areas under emergency conditions (DRBC Compact §§ 10.1-.8; SRBC Compact §§ 11.1-.8); and to regulate withdrawals in designated "protected areas" (DRBC Compact § 10.2; SRBC Compact § 11.2). One of the specific considerations in review of permits under the Protected Areas Program is the impact on flows of perennial streams (Weston 1985). Both of these powers overlay State common and statutory law relating to water use. Indeed, whenever the commissions find it necessary or desirable to exercise these powers, State-issued permits for diversions or withdrawals can be superseded "to the extent of any conflict with the control and regulation by DRBC or SRBC (DRBC Compact § 10.8, SRBC Compact § 11.8). Finally, the commissions may allocate water among the compact States in accordance with the doctrine of equitable apportionment, but such allocations do not constitute prior appropriations nor confer any superiority of right with respect to the use of those waters (DRBC Compact § 3.3(b); SRBC Compact § 3.8(c)). In the sections that follow, emphasis will often be placed on the statutes and authority of the DER because of its Statewide functions. With respect to the Delaware and Susquehanna Basins, however, the commissions' authority exceeds the DER in most matters affecting water quantity. Any strategy for protection of instream flows within the Delaware and Susquehanna basins must consider the respective commissions.

RIPARIAN RIGHTS

Opportunity

Any entity (government agency or private business) or individual who holds a riparian water right may demand that water in sufficient quantity be delivered downstream for their use and, thereby, protect instream flow values.

Background

In general, Pennsylvania courts follow the "reasonable use" variation of riparian rights doctrine. Riparian rights arise from the ownership of real property underlying or bordering streams and rivers. A riparian right is the right to use water flowing in a stream on or bordering one's land. The extent and priority of the right depends on such factors as the type of use made of the water, the size of the stream, and existing uses of the stream. Water obtained through the exercise of riparian rights can be used only on riparian lands. Rights to use water off riparian lands can be acquired only by municipalities and utilities through eminent domain or prescriptive rights, which are discussed in later sections.

Water for domestic use has top priority. Domestic uses include drinking, bathing, cooking, laundering, livestock watering, and other uses essential to preservation of life and health. A riparian owner can divert water for domestic use even when the water course's flow is materially diminished or a small stream is entirely consumed. Moreover, domestic uses have priority over "extraordinary uses." Extraordinary uses include irrigation and other non-domestic uses such as manufacturing, milling, power production, and recreational enterprises. The extent to which diversions and consumption of water will be allowed for extraordinary uses depends on whether the use is reasonable, having due regard to the condition and circumstances of other riparian owners on the stream. Extraordinary uses can materially diminish the flow of a stream but cannot substantially or unreasonably impair the uses of lower riparian owners. Reasonableness depends on the circumstances of each case and primarily relates to quantity of water taken relative to the size of the stream. When conflicts arise between several extraordinary uses, each riparian owner is required to limit use to an amount that is reasonable relative to the competing uses and to the extent that the diversions diminish flows.

Examples

The ability of lower riparian owners to enjoin unlawful and proposed upstream diversions was established early. For example, in *Rider v. York Haven Water & Power Co.* [242 Pa. 141, 88 A. 903 (1913)], a riparian owner obtained a decree perpetually enjoining a water and power company from diverting the waters of one channel to another to the injury of the riparian owner. In an even earlier case, the court held that lower riparian owners can recover damages from upstream diverters where the diversion materially diminished water flow, caused actual damages, or interfered with lower riparian uses [*Clark v. Pennsylvania R.R.*, 145 Pa. 438, 22 A. 989 (1891)].

The 1978 case of *Elwood v. The City of New York* [450 F. Supp. 846 (S.D.N.Y. 1978) *cert. denied* 447 U.S. 908(1980)] provides an example of the viability of riparian rights as a strategy for protecting instream values. The *Elwood* case involves riparian landowners who asserted their rights to the "full natural flow" of the Delaware River in an action in trespass for damages against the City of New York. A number of riparian owners along the Pennsylvania side of the river and its west branch claimed that the value of their lands had been diminished by thermal pollution arising out of the city's diversion of the river's headwaters for use as a public water supply. The district court in *Elwood*, using Pennsylvania common law, held that the rights "to be free from unreasonable increases or fluctuations in the flow" and to have the water table maintained at its natural level included the "right to be free from pollution and from unreasonable fluctuations in water temperature which cause actual damage."[7]

Evaluation

Every riparian owner has an equal right to put the flow of a river to reasonable use. The DER and PFC as well as private individuals can obtain this right by acquiring title to riparian lands. Riparian owners can institute lawsuits to enjoin upstream riparian uses that diminish flows to the extent that their own uses are impaired. In cases where the DER or PFC is the riparian owner, upstream uses that diminish instream and recreational values of the stream can be enjoined (see also the section below on the public trust). Any diversion for nonriparian use could be prevented in this way except where the user has obtained a right by prescription or eminent domain.

The drawbacks to this method of preserving instream flows include the monetary costs of acquiring property and of litigation. Moreover, there is a substantial burden of proof to overcome in order to be successful in such lawsuits. In order to prevail, the riparian owner must show first that the use is reasonable and second that either another use is unreasonable or that an otherwise reasonable use has substantially impaired the objecting riparian owner's preferred use.

PRESCRIPTIVE RIGHTS

Opportunity

An entity (government agency or private business) or individual who has acquired a prescriptive right (by adverse possession) may restrain upstream diversions that interfere with the continued enjoyment of that right and may resist downstream demands to cease or reduce its own diversion.

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[7] The District Court decision was reversed in part, in Badgley v. City of New York [606 F.2d 358 (1979)], which held that the Pennsylvania landowners had no cause of action against New York for water diversions authorized pursuant to the U.S. Supreme Court's decree in New Jersey v. New York [347 U.S. 995 (1954)].

Background

Aside from riparian rights, water rights can be obtained by prescription in Pennsylvania. The prescriptive right to use water in nonnavigable streams can be acquired by an open, notorious, and continuous use in a manner adverse to the rights of others for a period of 21 years. A right to use water that interferes with navigation in a navigable water course, however, cannot be acquired through prescription. Prescriptive rights differ from riparian rights in that they are not constrained to use on riparian lands or by considerations of reasonableness. The quantity is limited to that amount of water that was used continuously through the 21-year period. The holder of a prescriptive right has a virtually unassailable right to the use of water.[a]

Example

In Lukens v. Alan Wood Iron & Steel Co. [19 Montg. 78 (Pa.C.P., 1903)], defendant had diverted a quantity of water for over 30 years to run its grist mill. During six months of the year the diversion used nearly the entire streamflow, and in months of greater flow it took a substantial portion. When defendant subsequently built a steel mill on riparian land and diverted the same quantity to a reservoir for use in steel processing and steam production, a lower riparian mill owner sought an injunction. The court refused to enjoin diversion for the new use, however, because no greater quantity was taken by the new use than during the prior 30-year period for the old use.

Evaluation

It would be difficult for a resource agency or any individual to acquire a prescriptive right based on instream uses, because such uses probably will not be viewed as open, notorious, and adverse to other users on the stream. Because of the absolute nature of a prescriptive water right, however, and because such water can be used off riparian land, the DER and PFC must be prepared to challenge diversions before diversions ripen into prescriptive rights.

EMINENT DOMAIN

Opportunity

A municipality may protect instream uses by acquiring water rights through its condemnation powers and may have that water delivered downstream for its own use.

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[a] There is a line of cases that hold that property held for a public purpose cannot be acquired by adverse possession or use. See for example: A. O. Graham and Co. v. Pennsylvania Turnpike Commission [347 Pa. 622, 33 A.2d 22 (1943)]; Lacy v. Montgomery [181 Pa Super. 640, 124 A.2d 492 (1956)].

Background

Cities, municipalities, and public water supply agencies can acquire water rights in streams by condemnation [53 Pa. Stat. Ann. § 2905, 32 Pa. Stat. Ann. § 631(b)]. Such rights are limited in that they cannot deprive riparian owners of water for domestic, stock, and farming uses. Moreover, in order to acquire water rights by condemnation a water supply agency must first receive a permit from the DER (32 Pa. Stat. Ann. § 636, 71 Pa. Stat. Ann. § 510-8). The DER grants the permits only after a determination that the proposed use (1) is reasonably necessary for the present purposes and future needs of the applicant, (2) will not conflict with the rights of any other public water supply agency, and (3) will not interfere with navigation, jeopardize public safety, or cause substantial injury to the State (32 Pa. Stat. Ann. § 637). The DER is also directed to cooperate with municipalities in the construction and completion of projects and improvements for the conservation of water (32 Pa. Stat. Ann. § 510-5). Water conservation is an increasingly important consideration in all DER-granted permits to obtain water by eminent domain.

Examples

The court's willingness to protect a municipal water supply acquired by eminent domain was illustrated in Appeal of Haupt [125 Pa. 211, 17 A.436 (1889)], where a private water company had contracted to supply water to private users and proceeded to install pipes and pumps. A downstream public water supply agency established to supply the Borough of Ashland had previously acquired (through condemnation) the right to as much water as necessary for that purpose. The Ashland agency sued the private company to enjoin completion of the diversion works, alleging that the diversion would interfere with plaintiff's water supply, particularly in times of low flow. The court granted the injunction, ruling that public water supply was given special status by the legislature, was of greater relative importance than commercial uses, and must be protected when the public supplier acquired its rights pursuant to statute and not as mere riparian user. Under this same reasoning injunctions have been granted to restrain diversions by railroad companies used to supply their steam engines [Wilkes-Barre Water Co. v. Lehigh Coal & Navigation Co. 14 Luz. 319 (Pa. C.P. 1885)]. The same logic may apply to electrical generation facilities that interfere with public water supplies.

A more recent case illustrates the considerations that must be made by DER before granting permits for the acquisition of water to municipalities. In Borough of Collegeville v. Philadelphia Suburban Water Co. [104 A.2d 722, 377 Pa. 636 (1954)], a water company attempted to obtain a permit from a DER predecessor agency to invade a watershed where it had no franchise, to divert water to its franchised territory. The court held that the agency was required to consider not only the particular stream involved, but also the availability of other sources of supply, in order that the conservation, development, and equitable distribution of water in the public interest would be effected.

Evaluation

With respect to protecting instream flows, the power of municipalities to acquire water by condemnation cuts both ways, because the water acquired by a municipality is ultimately diverted from the stream. Condemnation of water rights by municipalities, however, could be quite useful in preventing upstream consumptive uses that permanently deprive a stream of water, unlike the relatively nonconsumptive uses of municipalities. The Pennsylvania courts have been willing to protect municipal water supply rights obtained by condemnation, from upstream commercial uses that interfere with those rights. Diversions by consumptive users such as thermo-electric power plants can be restrained where they interfere with public water supplies.

The DER has adopted a holistic approach to water use and a balancing of municipal needs against instream values in the use of its permitting authority over municipal water rights. The permit system is an effective vehicle for promoting conservation, and protecting instream flows.

GROUNDWATER

Opportunity

Groundwater might be used to augment or increase streamflows in emergency situations. More importantly, surface flows could be enhanced through the regulation and curtailment of groundwater withdrawals.

Background

Pennsylvania groundwater is classified as either (1) flowing in well-defined channels underground or (2) percolating through the soil. The owners of lands under which groundwater flows in a well-defined channel may make reasonable use of the water subject to the same rules that apply to riparian rights in a surface watercourse. The owners of lands under which percolating waters flow have absolute ownership of such waters. An exception is where such water supplies a spring or well on adjoining property. In this case, the owner may not act with malice or negligence and may not sell or distribute the percolating water for uses not related to his lands, if such activity will deplete the neighboring wells or springs.

Pennsylvania has no regulatory or statutory program that comprehensively addresses the allocation of groundwater among competing users or that provides for long-term management of groundwater resources. Such disputes are therefore left up to the common law, and are resolved in court. Both the DRBC and SRBC regulate withdrawal of groundwater under their "project review" authority (Weston 1985).

Example

The DRBC now requires permits for the drilling of new wells and registration of old wells, within the Southeastern Pennsylvania Groundwater Protected Area, that withdraw in excess of 10,000 gallons per day. Permits will not be granted if the proposed well will impair the flow of perennial streams in the area [18 C.F.R. Part 430].

Evaluation

Because of the continuity of surface and groundwater flows, augmenting surface flows with groundwater would probably only be beneficial in limited situations. Pumping of one groundwater source to supply a surface stream could directly deplete another stream. Moreover, the costs of pumping groundwater to the extent necessary to maintain streamflows could be prohibitive.

The most glaring aspect of Pennsylvania groundwater regulation is the lack of regulation. Groundwater pumping could eventually reach the extent that surface waters are depleted. More regulation of groundwater withdrawals similar to the DRBC's permitting in southeastern Pennsylvania is recommended. Until there is more regulation, riparian owners might prevent excessive withdrawals by showing that the withdrawal is actually a surface diversion, where surface flows are depleted.

WATER STORAGE

Opportunity

The DER can construct or regulate reservoirs to store water during high flows for release when flows would otherwise be injuriously low to aquatic life (32 Pa. Stat. Ann. § 659, 71 Pa. Stat. Ann. § 510-512).

Background

The DER constructs, maintains, and operates works for water storage and flood control (32 Pa. Stat. Ann. § 659(a); 71 Pa. Stat. Ann. § 510-4). Reservoirs created by DER under these powers also are used for recreation, but such use is subordinate to the primary purpose of flood control (32 Pa. Stat. Ann. § 659(B)). These powers and the flood-control purpose are subject to the condition that riparian owners shall not be deprived of reasonable flows of water necessary for the maintenance of fish and aquatic life (32 Pa. Stat. Ann. § 668). The amounts necessary for the maintenance of aquatic life are determined by the PFC.

Examples

The DER has designed, constructed, owns and operates about 88 dams and reservoirs, and another 75 flood control structures throughout the State. The facilities range in size from small, single-purpose recreation lakes, to large multipurpose reservoirs, such as the 64 billion gallon Pymatuning Reservoir.

Another strategy for managing water involves the purchase of storage capacity in Federal reservoirs. In conjunction with the compact river basin commissions and other agencies, the DER has arranged to purchase storage capacity in a number of Federal reservoirs that were constructed and are operated by the Corps of Engineers pursuant to the 1958 Water Supply Act (43 U.S.C. § 390b-f). This storage capacity is utilized to support downstream municipal, industrial, and agricultural supplies, to repel salinity intrusion, to improve water quality, and to protect instream uses.

Evaluation

Reservoirs can often benefit fisheries, but they can also be harmful. For example, reservoirs destroy the running water habitat essential to many aquatic organisms. The types of impacts on fisheries vary depending on whether the structure is for short-term flood-control storage or long-term water-supply storage. Since the primary goal of the flood-control structures is flood control, however, fisheries resources may often suffer rather than benefit from their construction. Therefore, 32 Pa. Stat. Ann. § 668, which requires "reasonable" outflows to maintain fish and aquatic life, is critical. A major difficulty is showing what flows are necessary for the maintenance of fish and aquatic life. Such a showing may be required where conflicting uses demand smaller releases from reservoirs than is thought to be adequate for fisheries needs in the stream below the reservoir. Therefore, information gathered and analyzed by PFC on the water needs of fisheries resources is essential because PFC may advise DER. DER has the ultimate authority to fix such releases (Weston 1985).

DAM REGULATION

Opportunity

DER can protect and enhance instream values by regulating the outflows of existing dams and the design and operations of proposed dams under powers granted by the "Dam Safety and Encroachments Act" (32 Pa. Stat. Ann. § 693.1 et seq.).

Background

The DER is in charge of regulating the operations of all dams except those licensed pursuant to the Federal Power Act (16 U.S.C.A. § 791 et seq.) and certain small facilities (32 Pa. Stat. Ann. § 693.4; 71 Pa. Stat. Ann. § 510-8). Dams cannot be operated or constructed without a permit from the DER (32 Pa. Stat. Ann. § 693.6). In determining whether or not to issue a permit and what conditions to put on that permit, the DER is to consider impacts upon water quality and the environment (32 Pa. Stat. Ann. § 693.5). Moreover, the DER grants a permit only where the project complies with instream flow guidelines of the PFC; its own regulations on the instream flow issue (25 Pa. Code §§ 105.111-105.113); and the laws administered by any river basin commission created by interstate compact (32 Pa. Stat. Ann. § 693.9). There are provisions for civil and criminal penalties where orders of the DER with respect to dams and encroachments are not complied with (32 Pa. Stat. Ann. § 693.18-693.22). Where PFC recommendations or guidelines conflict with DER regulations, the department has the ultimate responsibility to decide release requirements at DER-regulated dams (Weston 1985).

Dams licensed under the Federal Power Act do not require a DER permit under section 693.6, but still require water quality certification under section 401 of the Federal Clean Water Act. The DER is concerned mostly with dissolved oxygen and instream flows in 401 certification decisions.

Example

In 1958, DER's predecessor, the Water and Power Resources Board, instituted an action for injunctive relief against the Green Springs Company, Inc., which, without the board's consent, had increased by 17 inches the height of a dam across a nonnavigable stream. The injunctive relief sought was two-fold: (1) that the Green Springs Company be directed to remove the part of the dam that had been added to the pre-existing dam; and (2) that the company be enjoined from interfering with the natural flow of the stream as it existed prior to the date when the dam height was increased. The board eventually obtained its injunction after the constitutionality of the statute was first challenged and upheld [Water Power Resources Board, etc. v. Green Springs Co., 394 Pa. 1, 145 A.2d 179 (1958)].

Small-scale hydroelectric facility development has been a particularly active area for dam permitting in recent years. Recently, the DER and PFC conditioned the granting of a permit for a small hydroelectric facility on the Beaver River with a stipulation that there could be no decrease in flow.

Evaluation

While the primary purpose of dam regulation is human safety, the fact that the environment must be considered in permitting decisions makes the dam safety statutes an effective tool for protecting instream flows in Pennsylvania. Because the DER permits are granted only when PFC regulations are complied with, adequate instream flows for fish are required as permit conditions on all streams below new dams. Dams built prior to DER's permitting authority and dams licensed pursuant to the Federal Power Act have presented problems; however, the Federal Energy Regulatory Commission (FERC) does consider instream flow values in its licensing process. The flow standards adopted by FERC, however, may not be as beneficial as the PFC's. Older dams are also subject to standards that may not be as adequate as the new standards developed by PFC, which are based on current knowledge and new research.

STORM WATER MANAGEMENT

Opportunity

Proper control and use of runoff promotes groundwater recharge, reduces erosion, increases water retention, and, as a result, increases streamflows during low-flow and drought periods.

Background

Pennsylvania has enacted the "Storm Water Management Act" to operate as a vehicle for storm-water control. Under the act, counties are directed to develop and adopt watershed storm-water plans and ordinances to implement the plans, pursuant to review and approval by the DER (32 Pa. Stat. Ann. § 680.1 et seq.). Where a watershed includes land in more than one county, joint plans from the affected counties may be required (32 Pa. Stat. Ann. § 680.7). The plans and ordinances are designed, in part, to protect and conserve groundwater, control erosion, and to preserve natural and recreational values of the environment (32 Pa. Stat. Ann. §§ 680.3, 680.11). The DER may institute an action in court to compel counties to develop and adopt plans in accordance with the act (32 Pa. Stat. Ann. § 680.10). DER has yet to utilize this power, however, because the General Assembly had not approved the Storm Water Management Guidelines and Model Ordinances until Spring 1985. After the DER approves the plan, location, design, and construction within the watershed of storm-water management systems; obstructions, flood-control projects, subdivisions and major land developments, highways and transportation facilities, facilities for the provision of public utility services, and facilities owned or financed in whole or in part by Pennsylvania are to be utilized in a manner consistent with the plans [32 Pa. Stat. Ann. § 680.11(a)]. Any activity that is not in compliance with the plan or the associated regulations or ordinances is a public nuisance. for which injured persons can recover damages from responsible parties (32 Pa. Stat. Ann. § 680.15). What constitutes noncompliance with a plan, or injury under the act, has not been determined by the courts, but the Storm Water Management Guidelines outline the content of watershed plans, including implementing ordinances that may be adopted by communities to carry out provisions of watershed plans. Several pilot plans have been prepared, most notably in Erie and Allegheny Counties. In each case, specific runoff control measures and standards are established by the plans, to be followed by municipalities in reviewing subdivision plans and approving building permits. It is through this process that determinations are made whether specific projects or developments are controlling storm water in a manner consistent with the watershed plans.

Related to storm-water management are the DER-administered regulations adopted under the Pennsylvania Clean Stream Law to prevent the introduction of sediments resulting from earth-moving activities, into streams (35 Pa. Stat. Ann. § 691,402, and 25 Pa. Admin. Code §§ 102.1-.51). The regulations require the formulation of plans for erosion control during all earth-moving and the acquisition of permits for projects encompassing more than 25 acres (25 Pa. Admin. Code §§ 102.4 and 31(a)). The regulations are directed mainly at preventing water pollution by sediments but, in the process, relate to the collection of runoff and velocity control (25 Pa Admin. Code §§ 102.12(f) and 102.12(c), .13(1)(3), (b)(3), (c)). These regulations might eventually be integrated with storm-water management plans.

Example

An ambitious effort to consider all aspects of storm-water management on a regional basis was undertaken by the Joint Planning Commission (JPC) of Lehigh-Northampton Counties. The JPC prepared one of Pennsylvania's first comprehensive storm-water management plans. The plan includes (1) methods of analyzing storm runoff, (2) runoff analyses to be used by municipal officials in reviewing development plans for various watersheds, (3) the flow of storm water into sanitary sewer systems, (4) identification of critical drainage problems, (5) flood-plain management, (6) alternative structural measures to handle runoff problems, and (7) an implementation program.

The JPC has demonstrated the cost-effectiveness of maintaining natural swales and drainage channels and of requiring storm-water control and retention in subdivision plans. In a careful study of a 620-acre watershed in the JPC region, the planners compared a system of natural swales with flow retardation devices, such as detention basins, against a piped storm sewer system. In the event of a 10-year storm, flows in the lower reaches of drainage area were estimated at approximately 1225 cubic feet per second with the pipe systems, whereas the flow would be only 800 cubic feet per second with the swales system. The total cost for the storm sewer system was estimated at $2.4 million--in 1973 dollars--whereas the cost of the swales system (which included twelve acres of open space that could be used for recreation) was only $200,000.

Evaluation

Storm-water management is an effective tool for enhancement of instream flows during periods of low flow and drought. The addition of penalty provisions would be desirable to aid in the enforcement of storm-water management plans. In view of the substantial benefits that can be realized (and have been realized in some areas of Pennsylvania), from storm-water management, DER should take a more active role under its statutory authority to see that effective plans are implemented Statewide.

A holistic approach to storm-water management is essential. Storm water cannot be effectively managed when segmented into problems of diffuse surface-water drainage rights, water obstruction regulation, flood control, and flood-plain management. Moreover, planning has to encompass entire watersheds. Particular consideration should be given to relationships between storm-water management and groundwater quantity. Storm-water management cannot continue on a course of channelling and disposing of runoff as rapidly as possible, which will ultimately impair groundwater availability. Creative use of retention devices, natural ponding, and swale systems slows runoff, thereby lessening flood danger and recharging groundwater.

SOIL CONSERVATION

Opportunity

Activities or policies that prevent soil erosion also increase water retention and, as a result, increase streamflows during low-flow and drought periods (3 Pa. Stat. Ann. § 849).

Background

Pennsylvania has enacted a "Soil Conservation Law", in part, for the control and prevention of soil erosion in order to preserve natural resources, but also to assist in the control of floods, to maintain the navigability of rivers, and for the preservation of wildlife (3 Pa. Stat. Ann. § 849 et seq.). This act resulted in the creation of Soil Conservation Districts by counties and the State Conservation Commission under the DER (3 Pa. Stat. Ann. §§ 852 and 853, 71 Pa. Stat. Ann. § 510-103). The commission assists, oversees, and coordinates the activities of the districts (3 Pa. Stat. Ann. § 852). The districts carry out preventive and control measures within the district, including engineering operations, methods of cultivation, the growing of vegetation, changes in use of land and drainage operations on lands owned or controlled by Pennsylvania and on other lands with consent of the owners (3 Pa. Stat. Ann. § 857(3)). The districts assist, advise, and cooperate with other State and Federal agencies and private landowners in erosion control and prevention activities (3 Pa. Stat. Ann. § 857(4)). The districts are further directed to develop comprehensive plans for the conservation of soil resources and prevention of erosion and are empowered to acquire property to carry out the purposes of the act (3 Pa. Stat. Ann. § 857(5), (8)). Such plans could integrate nicely with storm water management plans discussed in the previous section.

Example

Several local governments and conservation districts have combined erosion control, watershed protection projects, and flood-plain management into sophisticated approaches to soil conservation. Particularly active programs now operate in Bucks, Montgomery, Chester, and Lancaster counties.

Evaluation

This strategy has been used effectively in some areas of the State, but has been little used in others. As is the case with storm-water management, the DER could assume a more active role in the implementation of soil conservation measures Statewide. Integration with storm-water management and flood-control plans is recommended.

LAND AND WATER CONSERVATION AND RECLAMATION

Opportunity

Acquisition of land and implementation of projects designed to protect and restore watersheds can reduce erosion, increase retention, and, as a result, increase stream flows during low-flow and drought periods (32 Pa. Stat. Ann. § 5103).

Background

The "Land and Water Conservation and Reclamation Act" defines "conservation and reclamation purposes" as "any use of land for water supply, flood control, water quality control development, soil erosion control, reforestation, wildlife reserves or any other uses that will maintain, improve or develop the natural environment of soil, water, air, minerals or wildlife...so as to assure their optimum use" (32 Pa. Stat. Ann. § 5103(2)). A specific goal of the act is the restoration of abandoned strip mines (32 Pa. Stat. Ann. § 5102(3)). Towards these ends, the DER has been empowered to acquire any interest in real property by purchase, condemnation, gift or otherwise to conserve, restore, and protect watersheds and streams (32 Pa. Stat. Ann. § 5005, 71 Pa. Stat. Ann. § 510-1(10)). To fund property acquisition and restoration projects, a $500 million Water Conservation and Reclamation Fund was established (32 Pa. Stat. Ann. § 5104). The DER is the primary recipient of these monies, but the Department of Community Affairs and local governments can also obtain grants for projects that benefit the water supply (32 Pa. Stat. Ann. 5116). In addition, the department conducts extensive reclamation work with funds received under the Federal Surface Mining and Reclamation Act (30 U.S.C. § 1201-1328), together with the proceeds of bonds forfeited by mining operators who have failed to properly reclaim their lands (Weston 1985). Cooperation among agencies and governments is encouraged (32 Pa. Stat. Ann. §§ 5117, 5119).

Example

Sufficient funding is not available to remedy all the problems associated with past mining. In 1983, the DER received $17 million for reclamation; the actual cost of reclamation is much higher. Estimates by DER indicate that there are approximately 165,000 acres of unreclaimed, abandoned, surface-mined land in Pennsylvania. DER's current estimate for the cost of reclamation of this land is between $990 million and $1.24 billion based upon a per acre cost of between $6,000 and $7,500. Surface mining regulation is discussed in a later chapter.

A number of notable State, county, and municipal parks have been established in flood plains through use of funds made available in the Land and Water Conservation and Reclamation Act. Tunkhannock Burrough utilized such funds to convert eleven single-family dwellings, one multifamily dwelling, and a fertilizer blending plant, all of which had been heavily damaged by Hurricane Agnes, into a passive community park.

Evaluation

Watershed management and restoration through land acquisition, reforestation, and erosion control can be very important in protecting insteam flows. A holistic approach to erosion control, watershed protection, and flood-plain management, as urged in preceding sections, is recommended for enhanced effectiveness of these programs. The statutory mechanism appears to provide sufficient authority to implement effective programs. The effectiveness of such a program is limited only by the availability of funds and zeal of agencies administering those funds. Reclamation can be extremely expensive, however. Obtaining adequate funding is the major hurdle of this strategy.

SURFACE MINING REGULATION

Opportunity

Pennsylvania has been and continues to be a coal-producing State. Surface coal mining can have substantial adverse impacts on both water quality and quantity. Therefore, instream-flow values can be promoted through regulation of coal mining activities to prevent water problems and promote reclamation (52 Pa. Stat. Ann. 1396.1).

Background

The Federal Surface Mining Control and Reclamation Act (30 U.S.C. § 1201-1328), grants the States primary authority to regulate surface mining where the State program is as stringent or more stringent than the Federal. In order to obtain primacy, Pennsylvania enacted the "Surface Mining Conservation and Reclamation Act" (52 Pa. Stat. Ann. 1396.1 et. seq.). The mining laws and regulations are implemented and enforced by DER through its Bureau of Mining and Reclamation.

The act requires that a permit be obtained from and a performance bond be filed with the DER before the commencement of surface mining activities (52 Pa. Stat. Ann. § 1396.4). The bond is to ensure that permit conditions and DER regulations are complied with. The regulations contain many reclamation provisions that will benefit instream flow values as discussed in previous sections. This section will point out additional regulations under the Surface Mining and Reclamation Act that can benefit instream flows.

First, the Environmental Quality Board (EQB) is obligated to designate an area unsuitable for surface mining if the EQB determines that required reclamation is technologically or economically unfeasible. The EQB may also designate an area as unsuitable for surface mining if operations will cause substantial loss or reduction in the long-range productivity of the local water supply, aquifers, or aquifer recharge areas (16 Pa. Stat. Ann. 1396.4). Interested citizens may petition the DER to designate areas as unsuitable for mining (16 Pa. Stat. Ann. 1396(f)). After study by DER and hearings by EQB, the EQB must decide whether or not to designate the area as unsuitable for mining. The EQB's decision must be issued in the form of a regulation (25 Pa. Admin. Code § 86.123(c)).

The act also requires operators of surface mines to replace any water supply that is diminished or contaminated as a result of mining (16 Pa. Cons. Stat. 1396.4b(f)). This includes replacing existing, as well as currently planned or designated, water supplies. If an operator fails to voluntarily replace an affected water supply, DER may issue an order requiring replacement (52 Pa. Stat. Ann. § 1396.4c) and may institute proceedings, such as bond forfeiture or the imposition of civil penalties (42 Pa. Stat. Ann. § 1396.22).

Finally, the act requires that no operator shall conduct mining operations within 100 feet of the bank of any stream, but there is a possibility for variance where the operator can show that there will be no adverse hydrologic or water quality impacts (52 Pa. Stat. Ann. § 1396e(i)).

The mining statutes provide for a substantial amount of public participation at each stage of the regulatory process. The public must be given notice and an opportunity to comment on all applications for permits to conduct mining (52 Pa. Stat. Ann. § 1396.4(b)). Private citizens can compel DER to inspect a mining activity to investigate allegations of violations by submitting written notice to DER that a violation exists at a site (52 Pa. Stat. Ann. 1396.21(c)). Any person who is adversely affected by specified mining activities may commence a civil action in Commonwealth Court or in a county common pleas court to compel an operator to comply with statutes and regulations (52 Pa. Cons. Stat. § 1396.21(a)).

Example

To date, the "unsuitable mining area" designation process has been initiated only by interested citizens filing petitions with DER. In two of those cases, the EQB has promulgated regulations designating areas unsuitable for mining. In Petition of Griffith Town Water Ass'n [13 Pa. Admin. Bull. 2968-69 (Oct. 1, 1983)], the EQB designated a 233-acre tract in Lacklick Township, Cambria County unsuitable for mines to protect a public water supply. In Petition of the Wood Duck Chapter of Trout Unlimited [13 Pa. Admin. Bull. 2896 (Sept. 24, 1983)], the EQB designated a 11,200-acre tract in Rush Township, Centre County unsuitable for mining to protect the City of Philipsburg's water supply and to protect aesthetic, hunting, recreational, and natural areas.

In Cambria Coal Co. v. DER [EHB No. 82-109-H (Feb. 16, 1983)], the Environmental Hearing Board (EHB) upheld DER's requirement that the applicant "document the availability of a replacement supply [of water] of equal or better quantity or quality." The EHB held that DER had authority to protect against the loss of water pursuant to the Pennsylvania Surface Mining Act and Article I, Section 27 of the Pennsylvania Constitution. The EHB reached its decision by relying in part on "the general legal principle that a court of equity may enjoin a nuisance before it occurs so long as the nuisance is demonstrated to be likely to occur."

Evaluation

There are several considerations in evaluating this opportunity. First, it is clear that the mining regulations provide necessary protection against future abuses to water resources from mining operations. A drive on Pennsylvania's Route 54 in northern Schuylkill County provides a vivid picture of the ravages of unregulated strip mining. Without strip mining regulation, instream flows in Pennsylvania will suffer.

Second, the bonding and penalty provisions are necessary, but it is doubtful whether they can provide the funds necessary to reclaim an area in the event an operator refuses to comply with regulations. Pennsylvania may consider a severance tax on current mining to pay for reclamation of abandoned mines. Overall, it is now more expensive to obtain a permit and ignore its conditions than it was in the past, so operators may be more careful.

Finally, the provisions for citizen involvement are excellent and it appears that they are being utilized. However, to be effective, citizens must become familiar with EHB rules and procedures.

COVENANTS PRESERVING LAND USES

Opportunity

Instream-flow values can be protected by restricting uses in watersheds that serve as water sources for municipalities and counties (16 Pa. Stat. Ann. § 11941-11946).

Background

Pennsylvania counties are authorized to enter into covenants with owners of land designated as farm, forest, water supply, and open space on an adopted municipal, county, or regional plan, for the purpose of preserving the land in the designated use (16 Pa. Stat. Ann. § 11943). The plan can only be adopted after a public hearing (16 Pa. Stat. Ann. § 11942). The landowner voluntarily covenants that the land will remain in use as designated in the plan for a period of five years. The county, in turn, covenants that the tax assessment of such property shall reflect the fair market value of the land as restricted by the covenant (16 Pa. Stat. Ann. § 11943). Certain counties can enter such covenants for 10-year periods (16 Pa. Stat. Ann. § 11943). Five-year covenants take effect upon approval of the court of common pleas of the county. Ten-year covenants take effect upon recording in the office of the recorder of deeds (Pa. Stat. Ann. §§ 111942 and 111943). The covenants can be renewed on a year-to-year basis when the initial term has expired (16 Pa. Stat. Ann. § 11944). In the event of breach by the landowner, the landowner is liable for the taxes that would have been assessed absent the covenant plus compound interest at the rate of five percent per year (16 Pa. Stat. Ann. § 11946).

Example

Bucks County entered into a land use covenant with Wladyslaw Kowalski concerning 37.31 acres of Kowalski's property. The unrestricted fair market value of the property was $309,600. The fair market value of the property as restricted by the covenant was $70,840. Thus, Kowalski realized substantial tax savings by entering into the covenant. The constitutionality of Pa. Cons. Stat. § 11941 *et. seq.* was upheld in a case involving Kowalski's covenant. [*Bensalem Township School District v. County Commissioners of Buck County* 303 A.2d 258 (Pa. Cmwlth. 1973)].

Evaluation

The tax incentive is sufficient to induce landowners to enter into land use covenants, particularly where the landowner intended no development of the property in the first place. Landowners are utilizing the strategy for the tax break. The biggest problem with the strategy is the short term of the covenants; however, without purchasing the property, a five-to-ten-year covenant is probably all that can be required. Landowners would be skeptical of longer-term restrictions that could prevent them from realizing substantial profits from the development of their land.

REGULATION OF THERMAL-ELECTRIC POWER PLANTS

Opportunity

Utilities that operate consumptive-use facilities could be required to finance or construct projects to develop water in a basin, install backup reservoir capacity, or adopt a schedule of diversions that reduces the need to divert water during low-flow periods (32 Pa. Stat. Ann. § 693 *et. seq.*).

Background

The Dam Safety and Encroachment Act (32 Pa. Stat. Ann. § 693.1 *et. seq.*) requires a permit from DER for the construction, operation, maintenance, modification, enlargement, or abandonment of any dam, water obstruction, or encroachment (32 Pa. Stat. Ann. § 693.6). The statute defines encroachment as "any structure or activity which in any manner changes, expands or diminishes the course, current or cross-section of any watercourse, floodway or body of water" (32 Pa. Stat. Ann. § 693.3). A thermal-electric plant usually requires the construction of a dam or other obstruction at the point of water diversion. Furthermore, diversion of the large quantities of water required for steam generation diminishes the current and cross-section of a stream. Therefore, thermal projects come under the permit provisions of the act, and it is the vehicle used by Pennsylvania to regulate thermal-electric plants. The act has never been used to regulate withdrawals, per se (Weston 1985).

A discussion as to why neither the Pennsylvania Limited Power Act (32 Pa. Stat. Ann. § 591 *et. seq.*) nor the Federal Power Act (16 U.S.C. § 791 *et. seq.*) are applicable to thermal-electric plants is beyond the scope of this paper. Within the respective river basins, projects, including thermal-electric plants, that have "substantial effect" on water resources must be reviewed and approved by DRBC or SRBC prior to construction.

The purposes of the Dam Safety and Encroachment Act are, among others, "to protect the natural resources, environmental rights and values secured by the Pennsylvania Constitution and conserve the water quality, natural regime and carrying capacity of water courses" (32 Pa. Stat. Ann. § 693.3). The DER may grant, condition, or deny permits for projects according to these purposes (32 Pa. Stat. Ann. 393.9(a)). Furthermore, the DER "may impose such permit terms and conditions regarding construction, maintenance, inspection and monitoring" of projects necessary to insure compliance with laws administered by the PFC and river basin commissions created by interstate compact (32 Pa. Stat. Ann. 693.9(b)). The DER, then, can deny permits to projects that would reduce flows below acceptable levels, or condition the permit upon measures that would negate the possibility of unacceptable low flows caused by powerplant diversions. The DER may also deny or condition a permit based on conditions the PFC considers necessary. Finally, proposed developments within the respective river basins require approval from the DRBC or SRBC directly.

Examples

These examples pertain primarily to the activities of the River Basin Commission. The river basin commissions have considered instream flows in the conditioning of operations of thermal-electric facilities. For example, the DRBC required a group of electric utility companies operating thermal-electric power generating plants in the Delaware Basin (Merril Creek Reservoir Project) to plan, finance, and install a backup water supply reservoir that, when built, will replace water evaporated at a group of existing and planned stations, including several in Pennsylvania. The project is designed to protect instream flows of the Delaware River during periods of low flow.

In 1973, the DRBC set diversion restrictions for the Philadelphia Electric Company's Limerick Nuclear Generating Station. DRBC set minimum flow criteria for the Schuylkill and Delaware Rivers and Perkiomen Creek, and limited withdrawals from these sources by Philadelphia Electric to periods when designated minimum flows are exceeded.

The SRBC required Pennsylvania Power and Light to construct a backup reservoir at its Berwick Plant and set a minimum flow using the "Q7-10"[9] standard.

Evaluation

High consumptive uses are of more concern to those interested in conserving instream flows than relatively low consumptive uses such as municipal and domestic. Thermal-electric power generation is a highly consumptive use that can permanently deplete flows for specific reaches of streams. Pennsylvania has the statutory framework to reduce such instream flow depletions by power producers. If the DER fails to use its permitting power to regulate power facilities in a manner conducive to preserving instream flows, private parties can challenge the DER decisions. Maximum utilization of this statutory authority to regulate power plant diversions would significantly reduce a substantial threat to the maintenance of adequate instream flows. To date, it appears that the DRBC and SRBC have been the most active regulators of thermal-electric facilities in Pennsylvania.

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[9] Definition on p. 32.

In order to best protect instream flows, riparian owners should actively intervene in the DER's permitting process for proposed power plant diversions. Notices of permit applications are published in the Pennsylvania Bulletin long before the DER makes its decisions. If aggrieved parties fail to intervene or bring an appeal within 30 days after notice of permit issuance, permits can no longer be challenged (25 Pa. Code § 21.21(a)).[10]

PENNSYLVANIA SCENIC RIVERS SYSTEM

Opportunity

Flowing bodies of water can be preserved and protected by inclusion in Pennsylvania's Scenic Rivers System (32 Pa. Stat. Ann. 720-21 *et. seq.*).

Background

In 1972, the Pennsylvania Legislature enacted the "Pennsylvania Scenic Rivers Act" (32 Pa. Stat. Ann. 820.21 *et seq.*). Pennsylvania's scenic river system is independent of the Federal system. Only the Upper Delaware River, in Pennsylvania, has qualified for inclusion in the Federal system (16 U.S.C.A. 1247). It is the policy of Pennsylvania under this act to preserve aesthetic and recreational values of its rivers by sound conservation policies and practices within its open scenic rivers system (32 Pa. Stat. Ann. 820.22). When a section of river is designated as part of the system, development and diversions are limited within the section according to its designated classification. These limitations benefit instream values, but they are not regulations arising under the Pennsylvania Wild and Scenic Rivers Act (32 Pa. Stat. Ann. 821.1 et seq.). Rather, State agencies such as DER, recognize these values and accommodate them under other regulatory programs (Weston 1985). Such designation might eventually be used in legal proceedings to regulate diversions upstream from the designated sections.

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[10] Weston comments that the Dam Safety and Encroachments Act is not used by DER to regulate water allocation (Weston 1985).

Rivers that are included in the system are classified as one of the following: wild river areas, scenic river areas, pastoral rivers, recreational rivers, or modified recreational rivers (32 Pa. Stat. Ann. 820.24). These classifications are defined as follows:

1. Wild river areas -- those rivers or sections of rivers that are free of impoundments and generally inaccessible except by trail, with watersheds or shorelines essentially primitive and water unpolluted.

2. Scenic river areas -- those rivers or sections of rivers that are free of impoundments, with shorelines or watersheds still largely primitive and undeveloped, but accessible in places by roads.

3. Pastoral rivers -- those rivers or sections of rivers which are free of impoundments excepting historic or restored mill dams. Diversions or withdrawals may exist to support agricultural activities such as agricultural ponds. The shorelines or watersheds may support a full range of farm or farm-related activities, so long as these activities do not conflict with the pastoral nature of the landscape.

4. Recreational rivers -- those rivers or sections of rivers that are readily accessible, that may have some development along their shorelines and may have undergone some impoundment or diversion in the past.

5. Modified recreational rivers -- those rivers or sections of rivers in which the flow may be regulated by control devices located upstream. Low dams are permitted in the reach so long as they do not increase the river beyond bank-full width. These reaches are used for human activities which do not substantially interfere with public use of the streams or the enjoyment of their surroundings.

Rivers included in the system must first be recommended by the DER after study by the agency (32 Pa. Stat. Ann. § 820.25). The DER submits its recommendation to the governor and General Assembly for designation in the system (32 Pa. Stat. Ann. § 820.25). Before making its recommendations, DER must hold public hearings on the issue in all counties where the proposed inclusion is located.

Each inclusion within the system involves a separate act by the General Assembly, which sets forth guidelines for management of the river corridors in accordance with the goals and policies of the Scenic Rivers Act. The DER and PFC are given management responsibilities within the corridors. All of the scenic river inclusion acts contain provisions that DER is to seek the cooperation of the DRBC or the SRBC. When a river is included within a commissions' comprehensive plan, it is protected by the commissions's enforcement powers.

Examples

To date, portions of the Schuylkill River, Stoney Creek, French Creek, Lehigh River, Lick Run, and Octorara Creek have been included within the Scenic River System by legislative acts (32 Pa. Stat. Ann. §§ 820.31 et seq., 820.41 et seq., 820.51 et seq., 820.61 et seq., 820.71 et seq., and 820.81 et seq.). Approximately 33 miles of the Lehigh River and 31 miles of its tributaries were designated by the General Assembly as either wild or scenic. In response to the designation, DER put restrictions on the use of the affected waters. In particular, DER defined and now regulates the carrying capacity of the Lehigh River Gorge State Park (related to State lands and waters in the park) to minimize the impacts of commercial whitewater outfitters' use on this resource (32 Pa. Stat. Ann. 820.67(5)). Carrying capacity is defined as "the level of use which a resource can support without causing a change, incapable of restoration by natural means, in the environment." These regulations are not dependent on scenic rivers legislation, but such legislation is a part of the overall environment in which DER develops regulations.

The Schuylkill River, Lehigh River, and French Creek Scenic River systems have been incorporated into the DRBC's comprehensive plan, and thus are protected by the DRBC's enforcement powers, which include penalties under the compact (DRBC Compact § 14.17, SRRC Compact § 15.17).

Evaluation

The DER has powers to protect instream flow values by planning and controlling development within these corridors. The DER's enforcement powers may be limited, however, because no penalty provisions are set forth in any of the component acts. Such provisions are desirable because, without them, the DER's effectiveness in regulating private activities within the corridors is questionable. It is fortunate that some of the stream portions of the Pennsylvania Scenic River System are included within the respective comprehensive plans of the DRBC and SRBC so that penalty powers are available for contrary activities in those areas. The compact penalty provisions provide necessary teeth to any enforcement of the admirable goals of the Scenic River System.

FISHERIES PROTECTION AND MANAGEMENT

Opportunity

Programs and regulatory schemes designed to enhance or protect fisheries often protect instream flows as well. The Pennsylvania Fish Commission (PFC) administers or acts in an advisory capacity in several programs that could benefit fisheries and thereby instream flows.

Background

One statutory provision (30 Pa. Stat. Ann. § 2502(a)) gives the PFC authority to police most activities affecting water quality and quantity. Specifically, that statute provides that:

> No person shall alter or disturb any stream, stream bed, fish habitat, water or watershed in any manner that might cause damage to, or loss of fish without the necessary permits.

"Permits" refers to PFC-granted permits for scientific or educational research (30 Pa. Stat. Ann. § 2905), management of particular species (30 Pa. Stat. Ann. § 2904), and use of explosives for engineering purposes. Any person violating this provision commits a misdemeanor for which criminal penalties are available (30 Pa. Stat. Ann. § 2502(a)).

It is statutory policy that Pennsylvania has sufficient interest due to its proprietary ownership of fish living in the wild, that the PFC has standing to recover damages in civil actions of trespass against any person who kills, fish or injures streams or stream beds (30 Pa. Stat. Ann. § 2506). Depleted flows may kill fish and injure streams.

The PFC has extremely important powers on fish streams that have artificial dams or obstructions. Most important, 30 Pa. C.S.A. § 3506 provides:

> No person shall draw off or dam water inhabited by fish without first applying for written permission from the commission, nor shall any person obstruct the flow of water through any such dam without allowing a minimum flow of water determined by the commission to be sufficient at all times to flow in the natural stream on which the dam is located to enable the fish to live. Any person violating the provisions of this subsection commits a summary offense of the first degree.

Therefore, the PFC can demand instream flows below new dams in streams with fish. The PFC authority over older dams is less clear, because the dam owner may have vested rights that PFC cannot interfere with. The PFC will assert their authority over old dams, however, if the owner proposes to alter use of the structure in any way.

Examples

The PFC actively fights polluters and even the DER is not free from PFC scrutiny. For example, the PFC filed complaints of trespass in the Commonwealth Court for the killing of 450,000 fish in the Allegheny River in 1972. These fish were killed as the result of discharge of acid sludge and other waste materials from a lagoon. Originally, action was brought against the township that owned the lagoon and the construction company that deposited the waste there. DER was subsequently joined as a defendant for allegedly contracting with the construction company relative to the construction that produced the waste products in the first place [Pennsylvania Fish Commission v. Pleasant Township, 388 A.2d 756 (Pa. Cmwlth. 1978)].

Most often PFC works with DER in enforcing pollution laws. When a watercress farming operation on the Letard River utilized a pesticide that caused a fish kill, both DER and PFC initiated legal action. Based on studies and calculations by the PFC on the economic value of recreational fishing, the farming operation settled out of court with the PFC for $2,000 and with DER for $10,000.

An example of PFC asserting its authority over dams was illustrated when the Town of Mansfield requested a permit to enlarge its water supply reservoir. Mansfield had totally cut off the flow of a small stream with its existing dam. PFC demanded a minimum instream flow as a condition to DER's granting of a permit for reservoir enlargement. PFC ultimately relented, but not without an agreement that the enlargement was only a temporary water source for Mansfield and that the town would have to find a new source of supply so that water could again flow in the dried stream.

The PFC has rejected the Q7-10 minimum instream flow standard adopted by the SRBC. PFC contends that Q7-10 standards do not reflect basin instream flow needs for fish, wildlife, recreational fishing and boating, swimming, and salinity control. The PFC utilizes a standard based on the ADF (Average Daily Flow). The PFC minimum flow requirements past diversions range from 6-25% of ADF, depending upon the involved basins' recreational quality. Required reservoir releases range from 12-35% of ADF, depending on storage capacity of the reservoir and basin quality. For comparison, the Q7-10 standard varies from .007% to 25% of ADF on Pennsylvania streams. Current research by fisheries experts has established the superiority of an ADF-based standard for meeting fisheries needs as well as the inadequacy of Q7-10 for such purposes (Johnson 1975).

The DER has adopted a different approach to low flow management. Specific criteria for dam operations are included in 25 Pa. Code Chapter 105, and additional guidance is provided in the department's lengthy report entitled "Pennsylvania Streamflow Management Task Force Working Paper #1, Defining Minimum Stream Flow Requirements for Various Water Uses" (October 1977).

Evaluation

The statutory structure is such that protection of fisheries is considered in all State government decisions regarding water, watersheds, and streams. Therefore, adequate instream flows are necessarily a further consideration. The criminal penalties and civil suit standing of the PFC provide strong vehicles for protecting fisheries and flows. Intensive study is necessary, however, to detect and determine the cause and effect relationships between such matters as watershed damage, instream flow requirements, and value of different species of fish. The overall effectiveness of the PFC is limited by funds, because it is difficult to police the multitude of activities that can affect fisheries in a State with as much water as Pennsylvania. The PFC, however, with its 80 field personnel and 600 unpaid deputized volunteers, is a zealous protector of water and fisheries resources. The fish laws are a key to Pennsylvania's efforts to conserve its instream resources.

WATER QUALITY REGULATION

Opportunity

Water is used repeatedly as it flows to the sea and most water uses are relatively nonconsumptive. For example, it is estimated that 90% of municipal and domestic water withdrawals from streams is returned and that only about 7% of water withdrawn for industrial use is consumed. Therefore, sufficient quantities of clean and unpolluted waters can be protected by insuring adequate and efficient treatment of waste waters. Regulation of mining and mines can also improve quality and protect groundwater recharge (35 Pa. Stat. Ann. § 691 *et seq.*).

Background

The Pennsylvania "Clean Streams Law" (35 Pa. Stat. Ann. §§ 691.1 *et seq.*) contains a broad mandate to prevent further pollution in, and to restore to a clean condition, every stream in Pennsylvania (35 Pa. Stat. Ann. § 691.4). The Clean Streams Law has extensive provisions for the regulation of sewage and industrial discharges and treatment facilities. No municipality or person shall discharge or permit the discharge of sewage into waters of the State unless authorized by the rules and regulations of the DER or first obtaining a permit from DER (35 Pa. Stat. Ann. § 691.202). Discharges without permits or contrary to the conditions of a permit are deemed a nuisance for which the State has a civil cause of action (35 Pa. Stat. Ann. § 691.202; 35 Pa. Stat. Ann. § 691.601). Furthermore, criminal penalties up to $50,000 and even imprisonment of up to two years are possible for violations of DER regulations, orders, or permit conditions on sewage discharge (35 Pa. Stat. Ann. § 691.202). Industrial waste discharges are likewise regulated by DER with the same penalty provisions (35 Pa. Stat. Ann. 691.307; 35 Pa. Stat. Ann. § 691.602). It is under the authority of the Clean Streams Law that DER has adopted regulations that enable it to administer the National Pollution Discharge Elimination System under the Federal Water Pollution Control Act Amendments of 1972.

The DER can require municipalities to acquire, construct, repair, or alter sewage systems and sewage treatment facilities (35 Pa. Stat. Ann. § 691.203). Plans and designs for the construction of industrial waste treatment facilities must be approved by DER (35 Pa. Stat. Ann. § 691.314).

The DER has broad responsibilities over municipal water supply and sewage facilities. A permit from DER is required for the construction of waterworks and sewage systems (35 Pa. Stat. Ann. §§ 713 and 750). Furthermore, under the Sewage Facilities Act, each municipality is required to submit to DER an adopted plan for sewage services within its area (35 Pa. Stat. Ann. § 750.4(a)). Such plans are required to provide for adequate treatment and prevent the discharge of sewage into streams (35 Pa. Stat. Ann. § 750.5(d)(3)). The plan must provide for adequate sewage services in the jurisdiction, including systems planned to be available within a 10-year period, considering soil geology, population density, water conditions, and other factors. Under the Clean Streams Law, the DER may issue orders to a municipality "to negotiate with other municipalities for combined or joint sewer systems or treatment facilities" (35 Pa. Stat. Ann. § 691.203). The DER can issue orders requiring construction of treatment facilities which often must serve more than one municipality.

Special provisions of the Clean Streams Law regulate mining activities. Mining discharges are regulated by DER under its power to require a permit for mining activities even for mines where operations have ceased (35 Pa. Stat. Ann. § 691.315). The DER usually requires a surety bond to guarantee compliance with the law and conditions of the mining permit (35 Pa. Stat. Ann. § 696.315). Two particularly important provisions guiding permit decisions are 35 Pa. Stat. Ann. § 391.315(c) and (d), which are as follows:

> (c) The application for a permit to operate a mine shall include a determination of the probable hydrologic consequences of the operation, both on and off the site of the operation, with respect to hydrologic regime, quantity and quality of water in surface and groundwater systems including the dissolved and suspended solids under seasonal flow conditions and the collection of sufficient data for the site of the operations and surrounding areas so that an assessment can be made by the department of the probable cumulative impacts of all anticipated mining in the area upon the hydrology of the area and particularly upon water availability...
>
> (d) The operator of a mine shall restore the recharge capacity of the operation to approximate pre-mining conditions.

Furthermore, the DER can designate areas such as aquifers and acquifer recharge areas as unsuitable for mining, where mining the area could result in a long-range reduction of water supply (35 Pa. Stat. Ann. § 391.315(1)(3)). These DER functions overlap with other DER functions discussed earlier in the chapter on surface mining regulation.

Example

Pursuant to the Clean Streams Law, DER has issued orders requiring construction of treatment facilities that often must serve more than one municipality. In City of Uniontown v. DER [E.H.B NO. 72-203 (1973)], the city objected to an order that required it to participate with other municipalities in a regional system. Although it was necessary for Uniontown to participate if the regional system was to be viable, Uniontown itself was not violating the Clean Streams law at the time the order was issued. The EHB held that:

> Where the proper provision for the prevention of pollution from sewage discharges from any source would be accomplished by ordering the city of Uniontown, or any other municipality operating a sewage treatment plant, to negotiate and enter into an agreement with another municipality which has not such plant, an order of the Department to do so is valid under the Clean Streams Law.

An example of DER exercising its power over acid mine drainage is provided in the case of Commonwealth v. Harmar Coal Company [452 Pa. 77, 306 A.2d 308 (1973)]. Adjacent to the Harmar Mine is the abandoned Indianola Mine. Accumulating water in the abandoned mine threatened to flood the Harmar Mine.

In order to make its mine safe for operation, it would be necessary for Harmar to pump 6.48 million gallons of acidified water from the Indianola Mine and discharge it into Deer Creek, a tributary of the Allegheny River. DER denied a permit to discharge the water as was required by the Clean Streams Law. The court held that DER should not issue a permit unless Harmar was going to treat the entire discharge, including the acid water that originated in the abandoned mine through no fault of Harmar.

In Community College v. Fox [20 Pa. Commonwealth Ct. 335, 342 A.2d 468, 475 (1973)], it was determined that citizens owning riparian land downstream of proposed sewer interception have standing to challenge grant of Clean Streams Law permits. The court also held that while lower riparians could challenge DER water quality permit decisions, the DER had limited authority to review the indirect environmental impacts of proposed actions. The court specifically denied any statutory authority vested in DER to review impacts of oversized sewer sytems. The reasoning included the view that local governments share the Commonwealth's trusteeship responsibilities to protect environmental values (Weston 1985).

On March 2, 1979, DER suspended Lackawanna Refuse Removal, Inc.'s permit and ordered Lackawanna to cease operation of its landfill. The action was the result of an investigation conducted by DER, which indicated that the operator had accepted for disposal in the landfill hazardous and toxic wastes in violation of the permit. Hydrologic testing showed that the leachate from the landfill flowed directly into St. John's Creek, a tributary of the Lackawanna River. DER followed this action by order made in August 13, 1979, which required the company to construct and operate a leachate collection and treatment facility at the landfill. The court upheld the agency's order and held that the Clean Streams Law does not require a finding of public nuisance as a precondition to a DER order [Lackawanna Refuse Removal, Inc. v. Commonwealth 442 A.2d 423 (Pa. Cmmwlth. 1982)].

Evaluation

These statutory control measures on sewage discharge and facilities, industrial waste and treatment, and mining have a primary goal of public health. However, if proper consideration is given to water quantity and extensive effort is put into area-wide planning and coordination, the Pennsylvania Clean Streams Law will, in the long run, yield substantial dividends in the protection of instream flow values. DER has been diligent in the exercise of its powers and duties under the Clean Streams Law.

The mining provisions are especially important in light of the extensive mining operations in Pennsylvania and the significant effects of that mining on the hydrologic cycle.

WATER PLANNING

Opportunity

The demands on a stream's flow are many and varied, as are the activities and operations that can effect streamflows. Moreover, many of the demands and activities interact in complicated ways to either enhance or deplete flows. As a result, simple and inexpensive solutions for water shortage problems can be overlooked in the absence of adequate area-wide planning and multidisciplinary study. A State can avoid water shortage problems and protect insteam flows through accurate prediction and recognition of problems and implementation of the most cost-effective solutions to those problems (71 Pa. Stat. Ann. § 510 *et seq.*).

Background

The DER is directed generally to study, consider, and determine public policy on: conservation, marketing, and equitable distribution of water; restoration and improvement of transportation by water; water for municipal, domestic, and industrial use; and the conservation of water resources by reforestation (71 Pa. Stat. Ann. § 510-541(1)). In order to serve this function, the DER may collect information relative to existing conditions of the water resources in the State, establish stream gauging stations, maintain complete inventory data, and devise all possible ways and means to conserve and develop the water supply and resource of the State (71 Pa. Stat. Ann. §§ 510-4(30, (4) and (6)). Based on these studies, the DER is empowered "to construct, maintain, and operate works for water storage, flood control, channel improvement, or other hydraulic purposes" (71 Pa. Stat. Ann. § 510-4(7)).

The DER is also given specific planning authority with respect to flood control (32 Pa. Stat. Ann. 510-9), soil conservation districts (3 Pa. Stat. Ann. § 852), storm-water and watershed management (32 Pa. Stat. Ann. § 680.5), municipal water supply (35 Pa. Stat. Ann. § 712), sewage treatment (35 Pa. Stat. Ann. § 750.5), and water quality surveys (35 Pa. Stat. Ann. §§ 691.304, 691.305). As discussed above, all of these areas relate directly and indirectly to the amount of water flowing in a stream.

The Delaware and Susquehanna River Basin Commissions (DRBC and SRBC) also have considerable water planning duties under the compacts. Both are required to develop plans for the development and use of water in the respective basins (DRBC Compact § 3.2, SRBC Compact § 3.3), and both have power to implement projects in accordance with those plans (DRBC Compact § 3.6; SRBC Compact § 3.4). These compacts are discussed below.

Example

DER has developed a 22-volume Pennsylvania State Water Plan. The Plan encompasses all aspects of water supply, flood control, fish and wildlife, recreation, navigation, water quality improvement, and other water-related needs. The DRBC and SRBC have also undertaken to adopt and implement truly comprehensive water plans and programs that address water problems throughout a watershed, regardless of political boundaries. Holistic approaches to erosion control, watershed protection projects, and flood-plain management have been developed in several local governments and conservation districts. Particularly active programs now operate, among other places, in Bucks, Montgomery, Chester, and Lancaster Counties.

Evaluation

Adequate planning is important for protecting instream flows. The effectiveness of Pennsylvania's scheme will depend on DER's ability to coordinate its many water-related functions and interested parties or entities into a cohesive unit. From this standpoint, the fusion of the several agencies with water responsibilities in 1971 is fortunate. DER must, likewise, work closely with the compact commissions and municipalities and various districts to achieve optimal results. The statutory framework appears to be adequate for developing a solid and integrated approach. Considerable work remains, however, before the full benefits of such planning can be realized in Pennsylvania.

OPEN SPACE LANDS AND WILD PLANT SANCTUARIES

Opportunity

Water can be conserved and protected by the acquisition and setting aside of lands for open space and natural areas where development is prohibited or restricted (32 Pa. Stat. Ann. §§ 5001 et seq.; 71 Pa. Stat. Ann. §§ 510-6).

Background

The Pennsylvania Legislature has recognized "that it is important to preserve open space in and near urban areas to meet needs for recreation and conservation of natural resources, including farm lands, forests, and a pure and adequate water supply (32 Pa. Stat. Ann. § 5001). The DER, Department of Agriculture, and the counties have been empowered, therefore, to acquire lands where such lands have been designated for open space uses in a plan approved by the State Planning Board or, in the case of counties, the County Planning Commission. The purposes for which the DER and counties may acquire open spaces are listed in 32 Pa. Stat. Ann. § 5005 and include:

(1) To protect and conserve water resources and watersheds; and

(2) To protect and conserve natural or scenic resources, including but not limited to soils, beaches, streams, flood plains or marshes.

The DER and counties may acquire property by purchase, contract, condemnation, gift, devise, or otherwise. The purposes for which the Department of Agriculture may acquire open spaces also include the protection and conservation of water resources and watersheds (32 Pa. Stat. Ann. § 5005). The Department of Agriculture can acquire property by purchase, contract, gift, or devise, but not condemnation. Once land has been designated for open space acquisition by the DER, Department of Agriculture, or counties, public hearings are required (32 Pa. Stat. Ann. § 5006). At the hearings, persons and municipalities affected by a proposed open space acquisition have an opportunity to present relevant evidence whether in support of or in opposition to the acquisition. The power of eminent domain has been delegated to the DER, Department of Agriculture, and counties for acquisition of open space lands (32 Pa. Stat. Ann. § 5008). DER has been granted similar powers to acquire parklands under 71 Pa. Stat. Ann. § 510-6.

The Pennsylvania Legislature has declared that certain flora, including those rare or endangered, are in need of active management, and that it is in the public interest to preserve and enhance such species for the benefit of all (32 Pa. Stat. Ann. § 5302). In order to fund active management, a Wild Resource Conservation Fund was established in 1982 by referendum and is funded by a voluntary contribution system on State income tax return forms (32 Pa. Stat. Ann. § 5302(2)). The interagency Wild Resource Conservation Board was established to promote the voluntary contribution system and administer the program (32 Pa. Stat. Ann. § 5302(4)). The monies contained in the fund are continuously appropriated to the board. Various agencies go before the board with proposals for projects or land acquisitions that would utilize the funds. A primary target of the funds is establishment of a Statewide system of private wild plant sanctuaries in order to maintain, protect, and enhance wild plant numbers (32 Pa. Stat. Ann. § 5302(5)). The DER is empowered to acquire natural areas of land as aquatic habitat or designate areas on land previously acquired for the establishment of public wild plant sanctuaries (32 Pa. Stat. Ann. § 5310). The DER's Bureau of Forestry also administers designated natural areas on State lands with goals that include protecting watersheds, conserving water, and regulating the flow of rivers and streams (71 Pa. Stat. Ann. § 510-20).

Examples

Wissahickon watershed within Philadelphia provides an example of a small watershed with a large percentage of dedicated public open-space land within an urban area. Peak discharges at the mouth of Wissahickon Creek increased only 5 to 20% between 1900 and 1968. This range is substantially less than would be expected given the change from rural to urban land uses over the period.

In 1970, the Department of Forests and Waters (now DER) took by condemnation 49.4 acres of land for its unusual scenic beauty. The land, known as Skippack Creek Farms, was within the Evansburg State Park project area. [Peters v. Commonwealth, Dept. of Forest and Waters 314 A.2d 584 (Pa. Cmwlth. 1974)]. This land was acquired as part of "Project 70."

Project 70 is the prime example of Pennsylvania's land acquisition efforts. Funds were authorized for the project in 1965 and acquired through the sale of bonds. The project resulted in funds for land acquisition of $40,000,000 for DER, $20,000,000 for local units of government (administered by the Department of Community Affairs), and $20,000,000 for PFC. In all, 200,000 acres were purchased for recreational purposes and State and local parks through Project 70.

Evaluation

Acquisition of lands and waters for open spaces and natural areas will protect instream flow values. First, acquisition of riparian lands can establish a riparian water right for the agency, with the associated instream benefits as discussed in an earlier section. Second, the prohibition on development within an open space area or sanctuary will protect the watershed and prevent diversions of water.

The primary limitation on this strategy is funding. Land acquisition is expensive and, in this day of skepticism by the public over government ownership of land, obtaining sufficient funds for significant land acquisitions could prove difficult. Pennsylvania has had success in obtaining funds for land acquisitions in the past, however, and the DER is continuing to pursue certain properties in efforts to enhance the State's park and forest system.

COMPACTS

Opportunity

Pennsylvania shares its waters and its water problems with several other States. In recognition of the shared resource, Pennsylvania has entered into interstate agreements regarding use and development of interstate water. Instream flow values can be protected and comprehensive water planning promoted through provisions in and support of such compacts. Additional compacts could be created for waters not covered by existing compacts.

Background

States have attempted to meet many of their regional water problems on a cooperative basis through formal interstate agreements or "compacts." Such compacts can be grouped into four categories: (1) water allocation, (3) pollution control, (3) flood-control planning, and (4) comprehensive regulatory and project development compacts, i.e., the Federal-interstate compact.

Pennsylvania was one of the pioneers in the development of the Federal-interstate compact when it helped conceive the Delaware River Basin Compact. The Delaware River Basin Compact grew out of decades of litigation and was created in 1961. The compact was a departure from traditional compacts in two respects: (1) the United States is a signatory party with the States, and (2) extremely broad powers are granted to the commission.

Examples

The two most important of Pennsylvania's river basin compacts and their administering agencies, the Delaware River Basin Commission (DRBC) and Susquehanna River Basin Commission (SRBC), were discussed earlier in the section on government agencies. Compacts with mainly advisory powers include the Potomac River Pollution Compact (32 Pa. Stat. Ann. § 741 et seq.), the Great Lakes Basin Compact (32 Pa. State. Ann. § 741 817.7 et seq.), and the Brandywine River Valley Compact (32 Pa. Stat. Ann. § 818). The Ohio River Valley Water Sanitation Compact (32 Pa. Stat. Ann. § 816.1 et seq.), gives "ORSANCO" the authority to set water quality standards, which the States are pledged to implement (Weston 1985). The Wheeling Creek Watershed Protection and Flood Prevention District Compact provides an example of a commission with considerable powers over a small watershed (32 Pa. Stat. Ann. § 819.1 et seq.). This section discusses the SRBC and DRBC as examples of existing compacts and that provide a framework for future compacts.

The SRBC and DRBC are based on a foundation of comprehensive planning and programming of action under the comprehensive plan. Both commissions have advisory, recommendatory, project development, and coordinating, as well as regulatory, duties involving water resource studies, collection of data, development of standards, adoption of rules and regulations, and the publishing and dissemination of information. Overall, the commissions are to promote and aid the coordination of activities and programs of all concerned with water resources administration in the basin. All of the information contributes to the comprehensive plan. Both plans have as goals protection and aid to fisheries, development of recreation, improved navigation, and regulation of streamflows toward the attainment of these goals. Compact Preambles. Subsequent acts of the respective commissions are to be consistent with the plans. No projects having a substantial effect on the water resources of the Delaware Basin may be undertaken by any person, corporation, or governmental authority without first receiving approval by the DRBC (DRBC Compact § 3.8). The DRBC is to approve only those projects that do not substantially impair or conflict with the comprehensive plan.

In the Susquehanna Basin, SRBC approval is required for any of the following types of projects (SRBC Compact § 3.10):

1. Projects on or crossing the boundary between signatory states.

2. Any project involving the interbasin transfer of water.

3. Any project within the borders of one signatory state but having an appreciable effect on the water resources of another state.

4. Any project that would have a significant effect on the comprehensive plan.

Comprehensive plans are implemented through the project approval provisions in the compacts. Federal projects subject to commission approval include projects of the Corps of Engineers, the Soil Conservation Service, and the Fish and Wildlife Service. State agency projects concerned with fisheries and wildlife, parks, and flood control within the basins also require commission review and approval. Local units of government are under compact purview in matters of water supply, waste water-treatment, and water-based recreation, as well as any other type of project that would have a substantial effect on the water resources of the basin. Finally, private enterprise can be subject to the commissions approval for hydro-electric power projects, public water supply projects, privately operated parks, real estate developments, and agricultural irrigation. The project review provisions give the basin commissions control over new power plants that contemplate significant consumptive water uses. The commissions have conditioned power plant approval on a requirement that the power company build backup storage if other reservoirs in the basin are determined inadequate to meet all present and projected water needs. The commissions review all projects of a type and size to come under their purview, regardless of sponsoring agency or jurisdiction (Weston 1985).

Another important function of the DRBC and SRBC involves the power to "regulate and control withdrawals and diversions from surface waters" within designated protected areas under emergency conditions including severe and widespread drought. Before a drought or emergency area is declared or designated the commissions must hold public hearings and unanimously agree that water demands "have developed or threaten to develop to such a degree as to create a water shortage as to impair or conflict with the requirements or effectuation of the comprehensive plan" (DRBC Compact § 10.2, SRBC Compact § 11.2). Once an emergency or protected area has been declared, the commission may regulate or prohibit withdrawals for domestic, municipal, agricultural, or industrial uses in excess of quantities set forth in the commissions' rules unless the withdrawal is pursuant to a State or commission permit issued prior to the basin compact. To date, neither body has invoked its permit authority pursuant to the protected area provisions. In the 1960's, however, the DRBC confronted severe drought conditions and was forced to implement an emergency diversion control program. The commission authorized most withdrawals and diversions to continue without special permit, but imposed an emergency limit on New York City's use. The emergency was terminated in March, 1967. Two more emergencies have since been declared including the most recent on May 14, 1985. The regulations for the DRBC and SRBC can be found in Chapters III and VIII respectively of Title 18 of the Code of Federal Regulations.

Evaluation

Many water-related problems cannot be solved within Pennsylvania alone, but require regional cooperation with the Federal government and neighboring States. Federal-interstate compacts have great potential for conducting comprehensive water resources planning and management on a regional basis. The DRBC is generally recognized as a particularly successful Federal-interstate compact commission. The SRBC was modeled after the DRBC and could enjoy similar success in the future.

A compact commission's effectiveness is limited by funding, available data, the adequacy of the comprehensive plan, and the zeal with which its responsibilities are carried out. The holistic approach of the DRBC and SRBC is desirable, but requires extensive information gathering and coordination.

Computer-modeling is a necessary tool of such an endeavor. The commissions have made extensive use of computer-modeling in formulation of their comprehensive plans and in reviewing proposed projects.

The other existing water compacts that Pennsylvania has entered into are much more limited in scope than either the DRBC or SRBC; however, they, too, can be a source of information and advice.

Pennsylvania could enter into other compacts that are created to solve the water problems of interstate basins. The SRBC and DRBC are suggested as blueprints for future compacts. The powers and goals can be restructured to fit the needs of any basin; however, the organizational needs of each drainage must be considered before a compact is entered into. The establishment of a compact commission ought to be reserved for areas with particularly difficult water problems that require a strong and unified management authority.

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OPPORTUNITIES UNDER THE PUBLIC TRUST DOCTRINE

by

Roger L. Freeman and Fredric W. Robinson

OPPORTUNITY

Each State owns certain property that it holds in trust for public uses. It holds this property not as a proprietor, free to sell or exchange it at will, but as a government, which must consider and benefit the entire public in any transaction involving public trust property. The responsibility of the State as trustee is the heart of the public trust doctrine. Under this doctrine, sale or grant of this trust property to private people can be examined very carefully by the courts, which may invalidate such sales or grants if the rights of the public have been slighted.

BACKGROUND

In the United States, the public trust doctrine has been applied to certain lands, waters, and wildlife. The doctrine requires each State to regulate and control public trust property within its borders in a manner consistent with the public interest. Moreover, the doctrine creates a legal right in the general public of each State, who may seek enforcement of the doctrine through the courts, should the trust be violated.

There are several ideas arising out of case law dealing with public trust property that lend support to the public trust doctrine: (1) certain interests or resources are so important to every citizen that this free availability is imperative, (2) some resources are so particularly the gift of nature that they should be preserved for use of the entire population, and (3) certain uses have a particularly public nature, which makes exclusively private use inappropriate (White 1983).

Certain lands are considered to be public trust lands. State courts, soon after the American Revolution, enunciated the principle that land underlying navigable water was inalienable to private parties. For these lands the Federal test of navigability is employed, which is a "navigability in fact" test: those rivers that *are used* or *could be used* as highways for commerce in the customary mode of trade and travel on water [*The Daniel Ball*, 77 V.S. 557 (1871)]. Today, however, the power to alienate public trust lands and the effect of alienation of such lands is governed by the laws of the various States. In the courtroom, four basic limitations have been placed on the power of a State to dispose of public trust property.

1. In construing grants by a sovereign (the various States) to private persons, a court will observe a presumption against the separation from the sovereign power of title or dominion to navigable waters and the lands beneath,

2. Grants by a State to private ownership remain subject to the paramount Federal commerce power,

3. Grants of submerged lands must not interfere either with valid public uses or with valid private riparian rights, and

4. The State must maintain its sovereign control over enough of the trust lands so as to protect all public interests; the state may relinquish control over a portion only when such action does not jeopardize the public interest in the remaining trust property (Althaus 1978).

The leading case, often called the lode star case of the public trust doctrine, is a United States Supreme Court Case: Illinois Central Railroad company v. Illinois [146 U.S. 387 (1892)]. The case arose after the Illinois legislature, in 1873, repealed their 1869 "fee simple" grant of the entire Chicago waterfront (about 1,000 acres of submerged land). Although the Supreme Court did not prohibit the disposition of public trust lands to private parties, it did hold that the State could not abdicate its trust over property in which all the people of the State had an interest, so as to leave the property entirely under private control.

Hence, a State must at least retain regulatory power over this public trust property. The Court declared that the title, which a State holds, of public trust property is:

> ... different in character from that which the State holds in lands intended for sale. ... It is a title held in trust for the people of the State that they may enjoy the navigation of the waters, carry on commerce over them, and have liberty of fishing therein free from the obstruction of interferences of private parties Illinois Central Railroad Company v. Illinois [146 U.S. 387 (1892)].

Under this case, when a State holds a resource that is available for free use of the general public, a court will be displeased with any governmental conduct that will either reallocate that resource to more restricted uses or subject public uses to the self-interest of private parties.

With regard to waters, generally, public trust waters are navigable waters; "navigable" waters equating with public waters and "nonnavigable" waters equating with private waters. The State must control its navigable (public trust) waters with rules and regulations. All privileges or uses granted in public waters are subject to State control.

For determining which waters are "navigable" (for the purpose of imposing the public trust on waters) each State can (and does) apply its own test of navigability. Some States have adopted statutory definitions of navigability (e.g., in Texas a nontidal stream is navigable if it retains an average width of 30 feet from its mouth upstream to its headwaters [Diversion Lake Club v. Heath 126 Tex. 129, 86 S.W.2d 441, 444 (1935)]. Other States use a floating log test, where water is navigable if it has the capacity to float logs to market (Wassenberg 1985). Still others use a recreational or pleasure boat test, where waters are navigable if they are capable of use for boating (even pleasure boating). These definitions of navigability are the major ones used by States today.

Traditionally, three public uses have been recognized as protectable under the public trust doctrine in "navigable water": navigation, commerce, and fishing. To these traditional categories have been added activities "incident" to navigation, commerce, or fishing, e.g., recreational purposes, that do not impair traditional public uses. Additionally, in some instances, public rights of passage on and access to navigable waters have been upheld (for discussion of recent State court decisions see Wassenberg 1985).

Generally, United States courts have been willing to interfere in four types of situations for the purpose of upholding the public trust. These situations are: (1) where public property has ben disposed of at less than a fair market price when nothing indicates an obvious reason for a subsidy, (2) when authority to make resource use decisions has been granted to a private interest that may subordinate public uses to the private interest, (3) where broadly based public uses have been reallocated to private uses or to narrow public uses, and (4) where the resource is not being used for its natural purposes (White 1983).

Protection of instream flow values by implementation of the public trust might take the form of injunctive relief, instigated by the public to maintain adequate streamflows for the public's use (boating, swimming, fishing). Or perhaps public agencies, on behalf of the public, might assert a right to protect and maintain adequate streamflows. Instream flow values might be further protected where streamflows are so low as to endanger fish or wildlife, which are also public trust resources.

EXAMPLE: THE PUBLIC TRUST DOCTRINE IN VERMONT

The public trust doctrine has been subject to extensive legislative circumscription in Vermont. The doctrine applies to public waters, which are defined as "navigable waters excepting those waters in private ponds and private preserves..." (Vt. Stat. Ann. Title 10, § 1422(6)). "Navigable waters" are further defined as:

> Lake Champlain, Lake Memphremagog, the Connecticut River, all natural inland lakes within Vermont and all streams, ponds, flowages and other waters within the territorial limits of Vermont, including the Vermont portion of boundary waters, which are boatable under the laws of this state [Title 10, § 1422(4)].

Under this statute, the key question is the definition of "boatable" waters. The judicial interpretation of boatable waters was first enunciated in New England Trout and Salmon Club v. Mather [68 Vt. 338, 35 Atl. 323 (1895)]. Boatable waters were described as those of "common passage" as highways:

> If it be capable in its natural state of being used for purposes of commerce, no matter in what mode the commerce may be carried on, it is navigable in fact, and therefore becomes in our law a public river or highway. [Ibid. at 345-46, 35 Atl. at 325].

The court later emphasized that boatable waters need not have the capacity to serve as a highway during every season of the year.

The subsequent case of Hazen v. Perkins [92 Vt. 414, 105 Atl. 249 (1918)] casts doubts on the continued validity of the Mather test. Rather than focusing on whether the waterbody in question was susceptible of common passage as a commercial highway, the Hazen court weighed such factors as the size and actual uses of the lake and its economic value to the area. Although the court stated that the disputed lake was in fact boatable under Mather, the actual test applied by the Mather court bore little resemblance to that used in Hazen.

Thus, the true extent of the public trust protection must await judicial clarification of these conflicting standards. One commentator has argued strenuously for recognition of the "boatable in fact" test urged by the dissent in Mather and more or less adopted in Hazen (8 Vt. L. Rev. 301, 318-19 (1983)). However, the boatability limitation remains ambiguous pending further judicial construction.

If a particular lake or pond is included within the public trust, no person may "encroach" on the waterbody without first obtaining a permit from the Water Resources Department (Title 10, § 403(a)). The WRD must determine that the encroachment will not adversely affect the public good before issuing a permit. Effects on water quality, fish and wildlife habitat, aquatic and shoreline vegetation, and other recreational and public uses must be considered by the WRD in assessing the impacts on the public good. These considerations supply ample authority for protection of lakes and ponds from activities such as construction; however, these provisions are not applicable to streams under Section 403(a).

More general authority for the administration of all public trust waters can be found in Vt. Stat. Ann. Title 10, Chapter 49, §§ 1422-1425. The WRB is authorized to establish rules defining areas on public waters wherein certain uses may be conducted and prescribing those uses (Title 10, § 1424(a)). Section 1424(b) makes it clear that recreational and aesthetic values are to be given much weight in formulating these rules.

The Vermont courts have also recognized that recreational values are well within the scope of the public trust [State v. Cain 126 Vt. 463, 236 A.2d 501 (1967); State v. Thomas Nos. 837-828-10-79, 839-84010-79, 841-842-10-79 (D.Ct.

of Franklin County, Vt. Oct. 14, 1982), interlocutory appeal dismissed, 140 Vt. 403, 438 A.2d 400 (1981)]. The district court in the Thomas case embraced a "capacity test" for defining the scope of the public easement for recreation; such a test equates the public's right to use of public trust waters with the capacity of that waterbody for supporting recreational activity. The Vermont Supreme Court has not embraced this broad reading of the scope of the public trust doctrine, but the inclination of the lower courts to broadly interpret the doctrine fares well for instream flow values. For under the capacity test, a public trust stream (i.e., one that is "boatable") that requires a certain flow rate to support whitewater canoeing may be shielded from impoundment if the stream has a clear capacity to support such a recreational activity. The capacity test propounded in Thomas was enunciated in the context of an access dispute, however, and thus was applied only to the question of the applicability of the public trust doctrine to recreational navigation.

Thus, Vermont law provides ample authority for invocation of the public trust doctrine to protect public waterways. Although much of the focus of the doctrine to date in Vermont has been access rights and proper use of lakes, the definition of public trust waters includes "boatable" streams. The applicability of the doctrine to instream flow values will thus turn in large part on the ultimate judicial interpretation of the term "boatable."

EXAMPLE: THE PUBLIC TRUST DOCTRINE IN PENNSYLVANIA

In 1971, Pennsylvania adopted the Environmental Rights Amendment to its constitution (Art. 1, § 27). That amendment states:

> The people have a right to clean air, pure water, and to the preservation of the natural, scenic, historic, and esthetic values of the environment. Pennsylvania's public natural resources are the common property of all the people, including generations yet to come. As trustee of these resources, the Commonwealth shall conserve and maintain them for the benefit of the people.

Thus, the public trust doctrine has a constitutional basis in Pennsylvania. This amendment creates an affirmative constitutional right of the people to a healthy, natural, and esthetic environment and provides constitutional recognition of the public trust doctrine, binding on the Pennsylvania courts. The extent to which the amendment will effect the court's application of the doctrine is still unknown. It is logical to assume, however, that a constitutional mandate will extend the reach of public rights beyond recent applications of the doctrine. The following summarizes past court holdings as to what parts of Pennsylvania waters are subject to the public trust.

Pennsylvania holds title to the beds of navigable waterways in trust for the public. Between the ordinary high and low water marks of navigable streams the public retains an easement, which is a right to use property for certain purposes without the owner's consent [United States v. Pennsylvania Salt Mfg. Co., 16 F.2d 476 (E.D.Pa. 1926)]. Similarly, creeks and smaller rivers that have been granted into private ownership "are private property, but if of sufficient capacity, at any stages of water, to be used for transportation of lumber or other goods, they are held subject to a public easement" [Barclay R.R. & Coal Co. v. Ingham, 36 Pa. 1944 (1860)].

Where Pennsylvania has title, the public has a right of unencumbered navigation in such streams [Flanagan v. City of Philadelphia, 42 Pa. 219 (1862)], the right to fish [Shrunk v. Schuylkill Navigation Co., 145 S. & R. 71 (Pa. 1926)], and the right to bathe and swim [Hunt v. Graham, 15 Pa. Super. 42 (1900)]. Language in these cases suggests that the public easement between high and low water marks also includes a right to fish [Wood v. Appal, 63 Pa. 210, 221 (1869); Jones v. Janney, 8 Watts & S. 436, 443 (Pa. 1844)]. In navigable streams, highest priority is given to the public use of commercial navigation [Hunt v. Graham, 15 Pa. Super. 42 (1900)].

The extent of public rights beyond navigation in private, but floatable or boatable, streams is not clear. A definitive statement of the scope of the public's rights in such streams, including fishing, swimming, boating, and esthetics awaits further judicial resolution. The Environmental Rights Amendment could prove very important in the courts' future holdings involving the public trust.

Although the Environmental Rights Amendment vests affirmative rights in the people, the Pennsylvania courts have been reluctant to give force to the doctrine in private actions against the government. The court in Commonwealth v. National Gettysburg Battlefield Tower, Inc. [454 Pa. 193, A.2d 588 (1973)] held that in order to successfully invoke the Environmental Rights Amendment, proof of violative conduct must be clear and convincing rather than by a preponderance of the evidence. This heightened burden of proof will undoubtedly make matters more difficult for parties asserting their constitutionally-mandated environmental rights. Another decision that does not bode well for privately-invoked public trust doctrine cases involves standing in environmental rights suits. Specifically, the courts have maintained a "person aggrieved" standard for standing. Such a standard could limit standing of environmental groups seeking to assert environmental rights in the courts. In fact, the court in Western Pennsylvania Conservancy v. Comm., Dept. of Environmental Resources [367 A.2d 1147, 28 Pa. Cmwlth. 204 (1977)] went out of its way to hold that an environmental group could not obtain standing by virtue of having members who "use and enjoy state parks." Therefore, environmental groups or concerned citizens may have to locate a plaintiff who does qualify under the aggrieved person test and employ them as a strawman under whose name the suit can be maintained.

Another court decision has also weakened application of the public trust in Pennsylvania. In Payne v. Kassab [468 Pa. 226, 361 A.2d 263 (1976)], the court established a standard for reviewing claims arising under the Environmental Rights Amendment where citizens are challenging actions by a government agency. The standard for judicial review was articulated as follows:

(1) Was there compliance with all applicable statutes and regulations relevant to the protection of the Commonwealth's public natural resources?

(2) Does the record demonstrate a reasonable effort to reduce the environmental incursion to a minimum?

(3) Does the environmental harm, which will result from the challenged decision or action, so clearly outweight the benefits to be derived therefrom that to proceed further would be an abuse of discretion?

This standard has been severely criticized as insufficient for protecting constitutionally-recognized rights, even though the court held the Constitutional Amendment to be self-executing and enforceable. In particular, the circumstance that governmental decisions affecting a constitutional right will be tested by the lax "abuse of discretion" standard has been attacked. It would be desirable from an environmental standpoint that the courts assume a more active role in protecting the public trust in Pennsylvania.

Generally, there are legal arguments that these holdings, which seem to have weakened the public trust in Pennsylvania, are non-binding, because they were unnecessary to the cases decided. The language in the cases remains, however, and only the future will tell whether the courts will afford adequate protection to constitutionally recognized environmental rights. At present, adequate protection is not provided by the courts. However, Pennsylvania agencies appear to be taking seriously their responsibility to protect the public trust under the Payne v. Rassab test (Weston 1985).

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7. Author(s) R. L. Freeman and F. W. Robinson

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Western Energy and Land Use Team
U.S. Fish and Wildlife Service
2627 Redwing Road
Fort Collins, CO 80526-2899

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This publication is one of a series of similar documents for western and midwestern States that provides a survey of State prerogatives and programs that may be used to protect the instream uses of water. Most of the opportunities for protecting instream flows are related to fish and wildlife habitat, although many other instream uses are considered, including hydroelectric power production, recreation, navigation, downstream delivery, and waste load assimilation. These documents illustrate methods to protect instream uses within the context of existing laws and regulations.

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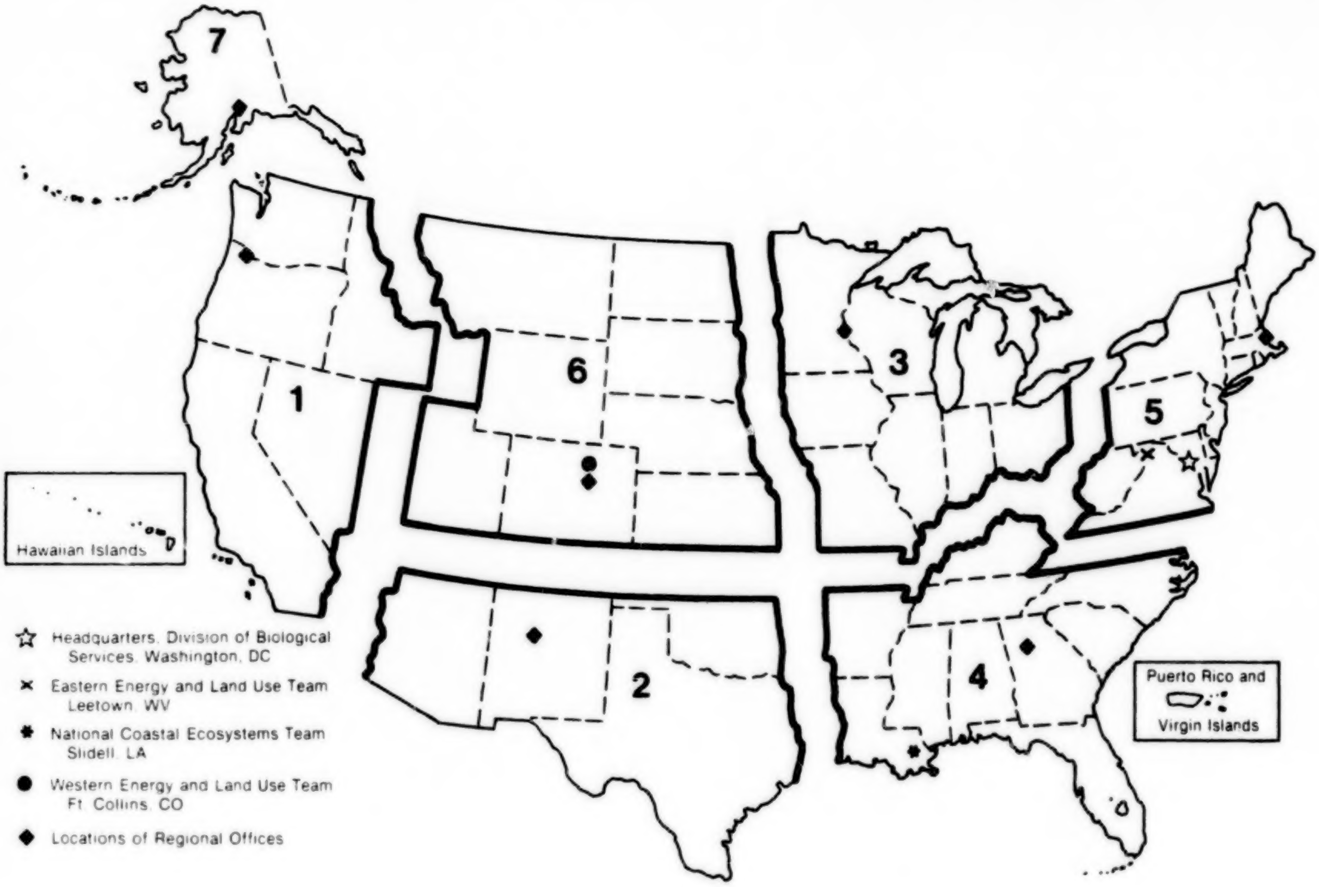
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× Eastern Energy and Land Use Team Leetown, WV
✱ National Coastal Ecosystems Team Slidell, LA
● Western Energy and Land Use Team Ft. Collins, CO
◆ Locations of Regional Offices

REGION 1
Regional Director
U.S. Fish and Wildlife Service
Lloyd Five Hundred Building, Suite 1692
500 N.E. Multnomah Street
Portland, Oregon 97232

REGION 2
Regional Director
U.S. Fish and Wildlife Service
P.O. Box 1306
Albuquerque, New Mexico 87103

REGION 3
Regional Director
U.S. Fish and Wildlife Service
Federal Building, Fort Snelling
Twin Cities, Minnesota 55111

REGION 4
Regional Director
U.S. Fish and Wildlife Service
Richard B. Russell Building
75 Spring Street, S.W.
Atlanta, Georgia 30303

REGION 5
Regional Director
U.S. Fish and Wildlife Service
One Gateway Center
Newton Corner, Massachusetts 02158

REGION 6
Regional Director
U.S. Fish and Wildlife Service
P.O. Box 25486
Denver Federal Center
Denver, Colorado 80225

REGION 7
Regional Director
U.S. Fish and Wildlife Service
1011 E. Tudor Road
Anchorage, Alaska 99503

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